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AUTO-INFECTION ASSOCIATED WITH THE INTESTINAL CANAL

By George E. Armstrong, M.D., LL.D., (Queens), D.Sc. (Liverpool)

Professor of Surgery, McGill University

THE idea that the bowels should move more or less regularly is probably as old as humanity. I cannot say just how early reference is made to this subject in "dry as dust" literature, but in our own time we are more or less familiar with the spring cleaning medicine, the blue pill and the morning saline.

Among the physicians who in comparatively recent years have emphasized the importance of attention to the intestinal content may be mentioned the late Sir Andrew Clark, who advised the use of salines, particularly in certain forms of anæmia. Metchnikoff's work is along similar lines. More recently, the attention of the profession on two continents has been directed to the subject by a distinguished London surgeon. The subject has assumed a wider scope. Sir W. Arbuthnot Lane, in his teachings and in his writings, dwells upon two distinct conditions, first, the altered relative position of the large intestine and the viscera in the abdomen, the resulting changes seen in the attachments of the large gut together with its alteration in form and position, and the changes that occur in the mucous lining of the stomach and small and large intestine; and, secondly, the general toxæmia that is gradually developed from the absorption of toxic materials from the altered intestinal canal.

Let us consider these two questions separately, and first, the anatomical changes indicated by Sir Arbuthnot Lane.

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The first and most conspicuous changes are seen in what he regards as the cesspool of the system, viz., the large intestine. They are first apparent in the cæcum which may become so dilated and elongated that when distended it occasionally fills the entire pelvis. Definite bands or adhesions are seen between the outer aspect of the large bowel and the peritoneum covering the abdominal wall in its vicinity. Incidentally, the appendix sometimes becomes hitched up about its middle and kinked, retarding or arresting drainage from its distal end.

The ascending colon becomes dilated. The upper limit of the ascending colon is abnormally fixed and occupies a higher position than in the healthy subject. This is caused by the contraction of an acquired band of peritoneal adhesions which drag the hepatic flexure upwards and help to oppose the downwards displacement of the large bowel. The anchoring band is attached to the kidney, and may acquire such an intimate relationship to the ilio-hypogastric, ilio-inguinal and last dorsal nerves that it is difficult to differentiate between conditions due to the drag of the colon and those due to the kidney. There is much wasting of the involuntary muscle in the wall of the gut. The transverse colon forms a loop with its convexity downwards. A portion of the loop frequently occupies the true pelvis, sometimes reaching to its floor. The splenic flexure is also dragged upwards and backwards by a hypertrophy and contraction of the pleuro-colic fold, supplemented by other peritoneal bands of new formation developed with the object of sustaining the strain on this flexure exacted by the loaded transverse colon in the erect position. The sharpness of the angles at the hepatic and splenic flexures is increased. The descending colon is small and the sigmoid flexure may become a short, straight, constricted tube.

Sir Arbuthnot Lane believes that these adhesions are developed to oppose the displacement of viscera, the tendency to which exists whenever the erect posture of the trunk is assumed, and are not inflammatory. The bands, adhesions and membranous films were described long ago by Virchow. They correspond to the parietocolic fold of Jonnesco and the bloodless fold of Treves. Whether they are congenital and secondary to certain abnormalities in the rotation and descent of the cæcum, as suggested by Mayo and Cheever, or the result of repeated mild infections, as indicated by Pilcher, Gerster and others, or evolutionary, that is, developing from increased strain caused by the erect position of the body, is not yet definitely established.

Some of my cases of "ileal kink" have shown a smooth band passing from the under surface of the mesentery to the antimesenteric border of the ileum, but a considerable number, probably over fifty per cent., have presented an appearance of scar tissue. The last one found was in a medical student, the band seemed to be composed largely of scar tissue, radiating in different directions, and adjacent was a large, soft, evidently infected lymph node. This case certainly suggested that ileal kinks may be due to bands forming secondary to infection of the lymph nodes that are abundant about the lower end of the ileum; that an adhesion occurs between the intestine and the mesentery which later on gradually stretches into a band,—a theory, by the way, that harmonizes with the teaching that there is normally a stasis of some hours in the lower end of the ileum.

The stomach and liver become displaced secondarily as well as the kidneys. These changes in the position and relations of the viscera are regarded as a result of mechanical conditions other than normal, such as excessive pressure or strain. They are regarded as compensatory.

Conditions similar to those described by Sir Arbuthnot Lane are familiar to physicians. They see *x*-ray plates that show the transverse colon displaced downwards, the flexures of the colon, especially the splenic, occupying a high position, and surgeons observe the condition at the operating table.

It occurred to me that it would be interesting to know what the anatomists regarded as the normal position of the abdominal viscera. To determine this point, I visited the professor of anatomy in the McGill Medical School, Dr. Geddes, and I think the visit was well repaid. Dr. Geddes has given some attention to this subject and I am sure you will all be interested in a brief, although I fear, somewhat imperfect recital of his conclusions drawn from observations made on the cadaver.

Dr. Geddes recognizes certain types that are more or less definite. First, is the high position seen in the young and called the infantile type, associated with small pelvic capacity, power and bulk of the abdominal and pelvic musculature, forcing the viscera to find room in the upper segment of the abdomen, which is large because of the thoracic development. In the female type the lower position is due to a relatively larger pelvic capacity, relative weakness and smaller bulk of the abdominal and pelvic muscles. In this type the lower thoracic segment is of smaller diameter. In later stages of pregnancy its expansion provides room for the

abdominal contents. The difference between the male and female type is most marked in the Caucasian or large-headed races.

At birth the stomach is vertical. This position is due to the pressure of the large liver. As the relative size of the liver diminishes and the power of the abdominal muscles increases, the stomach swings upwards and, at the age of five years, its greater curvature is absolutely horizontal in the bodies of children fixed in the supine position. This position remains practically without change until puberty. In the female the stomach begins to swing downwards at puberty. It gradually becomes more and more oblique until, at the close of adolescence, it is vertical.

In some lads at puberty the stomach descends into a slightly oblique position, but rises again when the post-puberal muscular development takes place. At this time its greater curvature becomes quite horizontal in subjects fixed in the supine position.

In women, after the first pregnancy, and apparently associated with relaxation of the pelvic floor and abdominal wall, the stomach would seem invariably to descend.

In man, as life advances and the muscular development declines and the thoracic diameter diminishes, the stomach assumes an oblique position which, in extreme cases, may closely approximate the vertical.

These observations are of great interest to clinicians. Prof. Geddes, in addition, has made an observation which I think is of great value. In a subject obtained soon after death, the abdominal muscles were stimulated to contraction by the injection of formalin. On then opening the abdomen it was found that the intestines had all been forced into the loins and pelvis, and that only the great omentum, mesentery and aorta lay between the abdominal wall and the anterior surfaces of the bodies of the vertebræ. This experiment of Dr. Geddes' strongly supports the view that the abdominal muscles are the active and most important force in holding the abdominal viscera in position. I believe it is a recognized fact that in strong, muscular men ptosis is not seen, in the hardy little Italian navvy ptosis does not exist. This view harmonizes with clinical experience. Ptosis and its associate symptoms are seen in people of weak and lax musculature.

Sir Arbuthnot Lane places "absence of the normal support afforded by the abdominal walls" as the third factor rendering the kidneys more or less mobile. I am strongly of the opinion that insufficient support of the abdominal wall and pelvic musculature is the first and prime etiological factor in ptosis of the abdominal

viscera, including the different portions of the gut. The lessons learned in the dissecting room are in accord with Lane's observations and teaching.

The second contention that a general toxæmia results from the absorption of toxic material from the altered intestinal canal, and also a diminished resistance to infection and nervous irritation opens up a large and almost unexplored field. That there is something in it, as the man on the street might say, is attested by the relief from medicines that clear the small and large bowel more or less completely; by the good results obtained in the application of the principles of Metchnikoff's, and the still more wonderful benefits seen after Lane's short-circuiting. Our knowledge concerning the toxic materials formed in the intestine and their absorption is limited. The advantages of specialization are too great and too numerous to be questioned, but when we approach the physiologists, chemists and pathologists on a question of this kind it becomes apparent that a closer working relationship between the laboratory man and the clinician would be to the advantage of both. The clinician would acquire a sounder foundation on which to build, and the laboratory man be made to sympathize with the needs and responsibilities of physician and surgeon, and to direct his research to a solution of the great problems of the bedside. To Cunningham, Huntingdon and Geddes we owe much. To the experimental work of Pawlow, Starling, Cannon, Carrel, Crile and Cushing we are all deeply indebted. I know of no more promising field for the physiological and pathological chemist than a study of the bacterial flora of the intestine and the absorption of food products and toxic materials.

Sir Arbuthnot Lane regards the large intestine as the cesspool of the system, and his results in short-circuiting and after the removal of the greater portion of the large intestine would seem to support this view. The foregut, which ends at the third part of the duodenum would seem to prepare food for absorption but not to absorb, unless perhaps the stomach and duodenum may absorb stimulants. The midgut, according to Keith, ends functionally at the splenic flexure and is intimately concerned in the absorption of solids and liquids. The descending colon is a simple tube connecting the lower end of the absorbing midgut with the sigmoid flexure or iliac colon which is the real scavenging barrel.

That most of the proteids are taken up from the small intestine would seem pretty clear. Probably every surgeon can recall instances in which, after opening the abdomen soon after the inges-

tion of a meal, numerous white streaks were seen in the wall of the jejunum. These white, milky streaks are the lacteals filled with proteids. The liquid contents of the cæcum, ascending and transverse colon, gradually lose a very large part of their water and the residue is sent through the descending colon to the scavenging barrel. These observations are the basis of the theory that the system gets its proteids from the small intestine and its water supply from the large bowel.

It has generally been taught that when the contents of the small intestine passed into the large bowel, they did not return into the small intestine. This view has obtained since 1579 when Caspar Banhin discovered the ileo-cæcal valve. Radiography has shown that while it is true that there is very little mixing of the contents of the small and large intestines yet sometimes bismuth and barium have been seen passing through the ileo-cæcal valve from the large to the small intestine. John Hunter realized the importance of more definite knowledge of the functions of the ileo-cæcal valve (*B.M.J.*, 1912, 2-1599). Keith, in 1903, concluded from anatomical considerations that there was always a functional muscular sphincter at the junction of the small intestine with the great. It is present in the amphibian bowels, the reptilian, avian and mammalian, as the transverse layer of the muscular coat of the ileum is greatly thickened where it enters the colon, and in the following year Elliott proved experimentally that such a sphincter exists. Hertz coincides with this view and thinks that there can be no doubt that the function of the ileo-cæcal sphincter, as suggested by Keith, is to prevent the contents of the ileum passing too rapidly into the cæcum. Keith and Newton, of Melbourne, have found that the bismuth-containing chyme reaches the end of the ileum an hour or even longer before any appreciable quantity passes into the cæcum, and that the ileum is often still full four, five, or more hours after the last traces of bismuth have left the stomach. These observations should be remembered when reading *x*-ray plates or making fluorescopic examinations.

We are indebted (*Journal of Physiology*, October, 1913), to Hertz, Newton, Schlessinger, Holzknecht, Barclay, Elliott, Cannon and others for much information regarding the movements of the contents of the colon. They find that these movements are not slow but that they occur quickly and at comparatively long intervals. During these movements the usual haustral segmentation disappears, to return again immediately afterwards. Local contractions of single sacculi have been observed. Another interesting

observation is that the entrance of food into the stomach appears to stimulate the lower end of the ileum and the cæcum, ascending and transverse colon to contract, or, as stated by Hertz, "it is now clear that the filling of the cæcum depends, to a large extent, upon a gastro-ileac reflex, which results in active peristalsis in the end of the ileum and relaxation of the ileo-cæcal sphincter whenever food enters the stomach."

The apparent object of the anastalsis observed in the large gut is to delay the contents of the cæcum and cæcal colon until the water is absorbed and the bacterial digestion in the cæcum is completed.

John Hunter left a number of specimens illustrating the structure of the large bowel in all classes of vertebrates, but the task of describing and interpreting Hunter's specimens fell to Sir Richard Owen. His conclusion was that gastric digestion could be repeated in the cæcum. Barclay Smith, in 1902, claimed that the changes in the food within the great bowel are not due to any digestive secretion, but to the action of bacteria which find a permanent abode in the cæcum and colon. The ileo-cæcal sphincter may be then regarded as having a twofold function, to prevent the putrefactive matters from receding into the ileum, and then to delay the emptying of the lower end of the ileum into the cæcum. Dr. Barclay Smith has drawn attention to the rich supply of lymphatics about the ileo-cæcal region and he regards this as a protection to the body from the bacterial hosts employed in cæcal digestion.

It would seem then that the large intestine has a function to perform although Dr. Barclay Smith expressed himself in 1902 as convinced that the large intestine is a useless incumbrance. In 1903 Metchnikoff stated that the rudimentery appendix, the cæcum and the whole of the large intestine are superfluous and that their removal would be attended by happy results. Prior to either of these statements Lane had reached the conclusion that the human cæcum and ascending colon served, in a class of cases described by him, as a cesspool, and had put his theory into practice.

Keith considers that there are in the ileo-cæcal region three parts which appear to be demarcated for functional purposes: (1) The cæcal colon which lies above or beyond the ileo-cæcal orific; (2) the cæcum proper which lies below or proximal to the ileo-cæcal orifice and arises as a diverticulum from the cæcal colon; (3) the apical or appendicular part.

In the rat's cæcum and in the human cæcum there is a distinct sphincteric ring near the junction of the cæcum and cæcal colon.

In the human, this sphincteric ring or cæcal sphincter is permanently united with the ileo-cæcal orifice and forms the well-known retinacular bands.

Cannon has shown that anastalsis is the characteristic movement in the proximal part of the colon in the cat, and many observers have corroborated the statement that anastalsis occurs in the human colon. Bond's reversed mucous currents may be thus explained.

Wilkie (*Journal of Pathology and Bacteriology*, Vol. xvii), observed ***post mortem*** a marked contraction of the cæcal colon; indeed, the appearance suggested an organic change in the bowel wall which on further examination was found to be normal.

A somewhat startling view is put forward by Schwarz and others, viz., that constipation is generally due to spasm, very seldom to atony; and Magnus claims that senna inhibits anastalsis in the cat's colon. Stearlin has demonstrated that senna in the human cæcum prevents the physiological delay in the onward passage of the fæces.

Vaughan Harley (*Proc. Royal Soc.*, Vol. lxiv), did some experimental work to determine the "Influence of removal of the large intestine and increasing quantities of fat in the diet and general metabolism in dogs," and found that the large intestine itself secretes a substance which contains proteids, fats, and salts and differs from the contents of the small intestine in that it does not contain any colouring matter. He found that the principal effect of removing the large intestine from dogs was to greatly increase the quantity of fæces with the same diet, an increase due mainly to unabsorbed water. He found the nitrogen and protein absorption slightly reduced (from 92 per cent. to 84 per cent.). He also found the aromatic sulphates diminished in the urine thus showing a lessening of intestinal putrefaction.

Starling finds that an important function of the large bowel is to excrete somewhat variable quantities of calcium, magnesium and iron and also phosphates. These substances are also eliminated to a considerable extent from the urine.

There is little doubt that the theories regarding the absorption of solids and liquids are, in the main, correct, They are, nevertheless, primitive and rudimentary and, for the clinicians' needs, sadly incomplete. We are concerned with deviations from the normal. We want to know more of the nature of the toxic materials that under more or less abnormal conditions may be taken up from the intestinal canal, and from what parts of that long canal

they are most likely to find their way into the body generally. It is stated by Sir Arbuthnot Lane that when intestinal stasis is present, toxic materials are absorbed that cause loss of weight, discolouration of the skin, gastric and duodenal ulcer, chronic mastitis and malignant disease of the breast, exophthalmic goitre, tic douloureux, joint lesions, as well as lowered nervous tone, irritability and lessened nervous energy. Surely it is fair to assume that there is a variety of toxic materials due to the action of different fermentable bodies and different fermentative and chemical changes. It is thinkable that not only the upright posture and weakened musculature are to be considered, but also changes in diet that have taken place in recent years, such as the increased consumption of meat and the smoother flour produced by the present milling processes. I have obtained some assistance from Dr. Bruère who is always up-to-date on questions of biological chemistry, but there is a dearth of knowledge of the toxines formed in the intestines. Indol is formed as the result of bacterial fermentation of proteids in the intestines (chiefly in the large). It is absorbed as indoxyl, or oxidized indol, and is excreted by the kidneys as the indoxyl sulphate of potassium. We have little knowledge of the effect on the economy of the etherial sulphates. Here is a promising field for the bacteriologist and chemist.

Bond's demonstration of the antiperistaltic action of the large bowel explains the good results obtained by rectal salines and rectal alimentation. His "reversed mucous currents" harmonize with clinical experience. Only a few days ago I observed a condition that I think worthy of note. The clinical diagnosis was partial obstruction and the operation undertaken to relieve it. An adventitious band was found in the pelvis partially constricting the ileum at about its middle. For two feet or more on the proximal side of the band the ileum was filled with hard, dry, fæcal masses similar to those commonly found in the sigmoid. They could be distinctly seen and felt. This would show that the greater absorption of water from the ascending colon was due, in part at least, to physical conditions.

When Sir Arbuthnot Lane first advised short-circuiting and colectomy for chronic constipation, I think many surgeons regarded the view as extreme and applicable to a very small class of cases. When the same procedure was recommended as a means of curing tuberculous hip disease, the idea produced a feeling in some minds little short of consternation. Reiteration and the publication of clinical results have made surgeons think very hard. Those who

have visited London and seen his work have been impressed with the results shown and by his perfect technique. I have visited his clinic at Guy's many times, but have been very slow in acquiring a full appreciation of his work. Finally, I decided to take Hunter's advice and try it. I have short-circuited ten cases. I will give you a very brief summary of them. They are too few in number and of too recent date to justify conclusions but the results in some of them are promising.

Case 1. Mrs. H., aged forty-four, referred to me by Dr. C. F. Martin. Has suffered severely from megrim and an intractible form of asthma for many years. No treatment ever afforded more than temporary relief to either the asthma or the headache. Dr. Martin and I placed the question of short-circuiting before her in a very guarded way. After consultation with her husband she decided to submit to the operation, which was performed in November, 1912. A letter, dated December, 1913, says that the headaches are less but that the asthma is not improved.

Case 2. Mrs. S., aged fifty-eight, was sent to me as a case of gastric carcinoma. For seven years she had suffered at times from severe epigastric pain and vomiting, the attacks lasting several days. The pain did not seem to bear any influence to the taking of food. She had lost thirty-four pounds in weight. An exploratory incision failed to find anything abnormal about the stomach, duodenum, pancreas, gall-bladder, appendix or pelvic organs. The cæcum, ascending and transverse colon were greatly distended and the descending colon and sigmoid empty. The abdomen was closed and she was advised to have a short-circuiting operation. After consultation with her family this was agreed to, and the operation performed on January 7th, 1913. On December 9th, 1913, she writes that she is in good health, as well as she ever was in her life, and had not had any signs of her old trouble since leaving the hospital.

In this case I anastomosed the transverse colon with the upper sigmoid.

Case 3. L. S., female, aged thirty-one, referred by Dr. Turner. Has suffered from chronic osteo-arthritis for seven years. The pain began in the arms and extended to the wrists, phalangeal joints and knees. There is limitation of movement. Back of right hand atrophied. Knees and wrists give a distinct cracking sound on movement. Is confined to bed. Treatment has not accomplished much. Constipation is a conspicuous feature of the case. I opened the abdomen on April 10th, 1913. Cæcum and

ascending colon much dilated. A distinct band was found running across the distal end of the transverse colon. The band was quite large and easily seen and felt. It was attached to the under surface of the transverse meso-colon, and passed over the colon and continued along the left border of the gastrocolic omentum. The colon was very much narrowed by this band, so much so that the obvious constriction caused by it seemed sufficient to account for the obstruction. The subsequent course of the case seemed to sustain this view. She left the hospital on April 27th. When discharged the constipation was less and her condition much improved. She had no pain whatever, the joints were not tender and could be moved freely. She could walk a little with support and without any pain. She continued to improve for six weeks when the constipation returned and, with the constipation, the pain in the joints.

She was readmitted on November 25th, 1913. Constipation extreme and the joints painful and tender. On December 4th, I reopened the abdomen. There was no recurrence of the band across the transverse colon but two new, distinct bands were found narrowing the lumen of the ileum at two points, one a few inches above the ileo-cæcal valve and the other situated in the left side of the true pelvis, crossing the ileum at about the junction of the middle with the lower third. Above the band was found the condition previously referred to, viz., for fully two feet on the proximal side of the band, the ileum was filled with large dry, scybalous masses. Both bands were divided and Lane's short-circuiting operation performed. For a time the improvement in the joints was considerable. The pain and stiffness recurred, however, and on February 5th, 1914, I removed the cæcum, ascending and transverse colon. It remains to be seen what the result of this last operation may be.

Case 4. E. P., female, aged thirty-five, admitted to the Royal Victoria Hospital, May 7th, 1913, complaining of epigastric pain, vomiting, and pain in the feet and legs. Attacks of epigastric pain and vomiting had recurred at intervals since July, 1911, when she was operated on for acute appendicitis. Dr. Pirie reports a stasis of twenty-four hours at the lower end of the ileum, which is sixteen hours too long. There is a trace of albumin in the urine from the right kidney, and the physical signs are suggestive of tuberculosis of the right upper and left lower lobes. The abdomen was opened on May 28th, 1913. Stomach, duodenum, liver, gall-bladder, bile passages and pancreas all found normal.

The lower end of the ileum bound down and partially obstructed by adhesions. These were separated and the area carefully covered by peritoneum. Her symptoms were all relieved.

Case 5. C. E., male, aged forty-four, admitted to the Royal Victoria Hospital, November 17th, 1913, complaining of pain in the back in the region of the sacrum, and of weakness. These symptoms followed an injury three and one half years ago. He was thrown from a horse and dragged. The radiograph showed the disease to be low down in the lumbar region. Six months before entering the hospital he had developed a psoas abscess on the right side, which was opened in Burlington, Vt. At present there is a discharging sinus on the right side and a prominent, unopened psoas abscess on the left side. This man was in the ward when Sir Arbuthnot Lane made his last visit, and he strongly urged short-circuiting. The man looked decidedly toxic. When I opened the abdomen I found the cæcum and ascending colon dilated, the transverse colon tied up at the hepatic and especially at the splenic flexures and, in the centre, dipping down into the pelvis. The descending colon and sigmoid were empty. I short-circuited the splenic flexure by anastomosing the ascending arm of the transverse colon with the upper end of the sigmoid. His convalescence was uneventful. The day following the operation his hands, which had previously been cold, were warm, and he expressed himself as feeling much better. On the fifth day after operation the discharge from the sinus ceased and had not recurred when he was last heard from. On December 21st last, he wrote me that he was well and felt like a new man. On January 31st, 1914, he was readmitted. There has been no occurrence of the discharge from the sight side, but an increase in the size of the psoas abscess an the left side.

Case 6. P. S., male, aged 43. Has suffered from stomach trouble for years. Gastro-enterostomy in Vancouver in January, 1908, not followed by much improvement. In March, 1908. Dr. Shepherd reopened the abdomen for persistent vomiting. The stomach was surrounded by a mass of adhesions. In January, 1910, Dr. Shepherd operated again and evacuated a mesenteric cyst. Vomiting continued and became a daily occurrence. The abdomen became more and more distended. He could not lie down at night. Constipation was a marked feature and difficult to overcome. The *x*-rays showed an almost complete obstruction in the transverse colon in the neighbourhood of the stomach, presumably by adhesions. On November 10th, 1913, I did Lane's

short-circuiting operation, attaching the end of the divided ileum to the side of the lower end of the iliac colon. Recovery was smooth and uninterrupted. He can now lie down at night. The abdomen is less prominent. He has gained thirteen and three-quarter pounds. There is a little tendency to diarrhœa. There is no vomiting.

CASE 7. R. C., female, aged twenty-two, admitted to the Royal Victoria Hospital complaining of chronic constipation and an ulcer on the leg. The administration daily of six ounces of pure liquid paraffin, three ounces of castor oil, three compound cathartic pills, and two or three cascara pills would not be sufficient to cause an evacuation of the bowel without the aid of an enema. Her hands and feet were cold and she had a toxic appearance. The hepatic flexure in this case was comparatively low and the splenic flexure high, pulled up, as expressed by Sir Arbuthnot Lane, by a shortening of the phrenocolic ligament. Proximal to the splenic flexure the large gut was greatly distended, the descending and iliac colon being even smaller than usual. I did a lateral anastomosis between the ascending arm of the transverse colon and the upper end of the sigmoid. Convalescence satisfactory. This girl has improved but the constipation, although less, is still troublesome.

CASE 8. M. H., female, aged twenty-seven, admitted December 30th, 1913, compaining of nausea, vomiting at intervals of a few days, and constipation. She had been operated on for appendicitis five weeks before admission. She also had a most severe form of pyorrhœa alveolaris. For the latter she was placed under the care of Dr. Peter Brown. Dr. Kaufmann, under whose care she had been before admission, had sent her into the hospital with the express object of having a short-circuiting operation for the obstinate constipation. Dr. Pirie found ileal stasis. Lane's ileosigmoidectomy was performed on January 13th, 1914.

CASE 9. L. P., male, aged twenty-six, admitted January 8th, 1914. He had a discharging sinus in the left groin, orginating in the body of the third lumbar vertebra. The swelling in the left groin was first noticed about four years ago. It was opened by a doctor in New York. Again, in January, 1913, he was operated on in a New York hospital. A large incision was made in the left groin. The sinus, however, continued to discharge, and he was admitted to the Royal Victoria Hospital on the recommendation of Dr. W. F. Hamilton on October 4th, 1913 and discharged on November 27th, 1913. On his readmission in January, 1914, the

x-rays showed marked stasis in the colon. Lane's ileosigmoidectomy performed on January 20th.

CASE 10. C. G., male, aged twenty-six. Tuberculous disease of the third and fourth lumbar vertebræ, Christmas, 1911. Admitted to the Royal Victoria Hospital in August, 1912, and sent to Ste. Agathe in October, 1913. He was readmitted on December 6th, 1913. Sir Arbuthnot Lane saw him during his visit in 1912 and advised short-circuiting. The *x*-rays did not show any intestinal stasis and the operation was not done. On his readmission his condition was very bad. He had a double psoas abscess, one of which had been discharging ever since June, 1913. With a good deal of hesitation I decided to do Lane's operation which was performed on December 11th, 1913.

These results are suggestive. I think we may say that they justify a further trial in suitable cases.

This work opens up a new field. Three great questions present themselves. Does intestinal stasis produce degenerative changes in all the tissues of the body? Does it lower resistance to invasion by deleterious organisms? Does it seriously lessen recuperative and reparative power? Carrel's experiments demonstrating that tissues can go on living almost indefinitely if the drainage of their toxic products is carried off effectively, support an affirmative reply.

There is one more element that we must not forget, and that is the nervous element referred to by Sir Dyce Duckworth. Speeding up, the strenuous life, great affairs and great responsibilities must exert an influence on tissue metabolism. Sir Arbuthnot Lane has perhaps drawn attention to a physiological problem really greater than we yet appreciate. Changes have taken place in habits of life and changes in diet. We have studied the enemy in studying disease resulting from injury and infection, and with great benefit to mankind. It is quite possible that as great an advance may be made by directing attention to our defences. It would seem that the time has arrived for the physiological and pathological chemist, and that to him and his researches, carried on in close relationship with the clinician, we may look for further advancement in the solution of many of the difficult problems regarding the nature of many diseases.

We must not do Sir Arbuthnot Lane the injustice of thinking that he advises operative measures in all cases. Mild and early forms of intestinal stasis are sometimes relieved by milder measures. Mucus is the natural lubricant of the intestinal canal. When this

is insufficient, he sometimes uses paraffin and mechanical support of the adbominal wall. In his own words, liquid paraffin given before each meal "precedes the food in its passage along the canal and facillitates the effluent. As it cannot be absorbed it renders the motions fluid and ensures one or more evacuations daily. Its action as a lubricant is so remarkably efficient that it can meet many of the troubles that arise directly or indirectly from chronic intestinal stasis. Associated with the use of paraffin, a spring support which presses on the abdomen below the umbilicus acts very effectively in stimulating the intestines to pass on their contents, in preventing the puddling in the ileum which produces distention of the duodenum and stomach, in keeping up the transverse colon, cæcum and other viscera which prolapse, and in exacting a constant pressure upon the veins in the splanchnic area so preventing the accumulation in this situation and keeping the brain well supplied with blood."

When these measures fail, we have in short-circuiting a remedy that promises relief in suitable cases. We have not had any mortality in our cases and the operation may be regarded as comparatively safe. It seems quite clear that in this problem we have three definite and distinct factors to consider: first, digestion by the digestive fluids secreted by the stomach and intestine; secondly, bacterial digestion; and, thirdly, the mechanics, or the movements of the contents through the small and large bowels. Each has an important influence on digestion and tissue metabolism, and our operative procedure must be designed accordingly.

THE Solly Tuberculosis Society was formed at a meeting of physicians which took place at Colorado Springs January 24th, 1914. The society will meet each month and will discuss some particular phase in the treatment of tuberculosis. The first regular monthly meeting was held February 17th, when the question of the influence of altitude and climate in its relation to tuberculosis was taken up. A report was read on some experimental work recently done at Colorado Springs, which showed that nature attempts to increase blood platelets in tuberculosis, that blood platelets are one source of opsonin, and that at the altitude of Colorado Springs the blood platelets are increased.

ACIDOSIS

By V. E. Henderson, M.A., M.B.,

Associate Professor of Pharmacology in the University of Toronto

ACIDOSIS, or acid intoxication, is never a proper diagnosis; it is not even a clinical symptom, or symptom-complex, but is in an exact sense, only a chemical fact, to be ascertained only by certain chemical means. This chemical state is, however, accompanied by certain symptoms, and it has been the endeavour of many experimenters to disentangle these symptoms from those that are caused by other chemical changes, which are usually proceeding in the body at the same time, and which are probably of even greater significance.

I hope you will bear with me while I strive to make clear to you what the biochemist means by acidosis.

If we take the purest possible water, we find that it conducts electricity very poorly. If we add salts or acids, its conductivity improves. Such conductivity as the water possesses depends, not on the molecules, H_2O, but on the presence of dissociated molecules. In pure water one ten-millionth of a gramme in every thousand breaks up into parts ions ($H_2O = H + OH$) the H bearing a positive electric charge, and the OH a negative. When we test such pure water with solutions of indicators, litmus, phenolphthalein, etc., we find that it leaves their colours unaltered; it is, we say, neutral in reaction. Any solution which contains more H ions than pure water will react to indicators as an acid, containing less as an alkali. We express the number of H ions in water 1/10,000,000 g in 1,000, as 1×10^{-7}.

A solution of pure sodium bicarbonate $NaHCO_3$ also may be thought of as undergoing dissociation into the ions Na, H and CO_3. But the concentration of H ions ($0{\cdot}3 \times 10^{-7}$) is less than that in pure water. The solution is faintly alkaline, but not sufficiently so to give a red (alkaline) colour with phenolphthalein, one of our most delicate indicators. Na_2CO_3, whose dissociation may be represented as Na, Na, CO_3, is definitely alkaline. NaH_2PO_4 (acid) and Na_2HPO_4 will similarly dissociate, and in the blood these phosphate salts, with the carbonates, are the important elements in preserving the constancy of the H ion concentration of the body

fluids. The phosphates are possibly the more important, but in order to present a simple picture, I will leave them largely out of my subsequent consideration of this subject.

A solution of pure sodium bicarbonate, if left exposed in an open vessel, rapidly becomes definitely alkaline, and will redden phenolphthalein. The changes that a small part of the bicarbonate undergoes may be pictured as follows: $2NaHCO_3 = Na_2CO_3 + H_2CO_3 = Na_2CO_3 + H_2O + CO_3$. The gas carbon dioxide, CO_2, escapes into the air. If we place a bicarbonate solution, however, in a closed vessel into which we introduce some CO_2, this change does not occur, since then we have the following. Some of the CO_2 dissolves in the water to form H_2CO_3. Once the water is sufficiently saturated with this acid, the bicarbonate will be prevented from breaking up. The percentage of carbon dioxide gas in the air above a solution of sodium bicarbonate, which is sufficient to so saturate the water of the solution as to prevent the break-up of the bicarbonate, will depend on the percentage of bicarbonate in the solution. Apply these conceptions to respiration by the body. Let us think of the blood as consisting of a solution of $NaHCO_3$ and H_2CO_3, the latter being kept at a constant level of saturation by the CO_2 in the air in the alveoli of the lungs. The atmospheric air contains only 0·04 per cent. CO_2, the air left in the alveoli at the end of expiration about 5·2 per cent. This percentage in the alveolar air is sufficient to keep the blood so saturated with H_2CO_3 that there is about one part of this gas for every ten to eleven parts of $NaHCO_3$. Now if one does forced breathing for two or three minutes, the percentage of CO_2 in the alveolar air will fall greatly, and in consequence that of the H_2CO_3 in the blood will also fall, the CO_2 being given off through the lungs; and in consequence, some bicarbonate will break up, being converted into carbonate with less of CO_2; the blood will become more alkaline, the H ion concentration will fall. Any change, especially any sudden change, in H ion concentration affects the respiratory centre, a decrease, as in this case, decreasing its activity. And, as is well known, after forced breathing there is a period of apnœa, a lack of desire to breathe. If the breath be held, on the other hand, the percentage of CO_2 in the lungs rises, as also that of H_2CO_3 in the blood stream; the H ion concentration increases and a great desire to breathe is followed by rapid respiration.

Now, let us consider what must occur if an acid is produced in quantities in the body, or introduced into its blood stream. Take the case that we are injecting intravenously a weak solution of

hydrochloric acid, HCl. Then the equations may be thought of as running as follows: $2NaHCO_3 + 2HCl = 2NaCl + CO_2 + H_2O$. The CO_2 will escape through the lungs, and the solution will become neutral. The addition now of more HCl would result in acidity. Only one ten-millionth of a gramme of water in a thousand dissociates; one thirty-millionth of $NaHCO_3$ in one thousand dissociates, but in a dilute solution of HCl more than 90 per cent. dissociates, so that as soon as the HCl is in excess, there is a great number of free H ions.

This may be illustrated by the following table, showing the results in an experiment[1] which was performed under the following conditions. A thousand grammes of $NaHCO_3$ was dissolved in a hundred litres of water, and placed in a closed vessel, above which was an atmosphere containing one gramme of CO_2 in a litre. Some of the CO_2, as explained above, will dissolve in the water. Into the solution HCl was run, and the first column shows the amount of HCl in grammes added. As the CO_2 could not escape from the vessel, the pressure of CO_2 rose, and more H_2CO_3 was dissolved in water, and consequently the ratio of H_2CO_3 to $NaHCO_3$ rose.

HCl in grammes	Ratio H_2CO_3 : $NaHCO_3$	H ion concentration
0.	2·27	11·9	0·57 10^{-7}
10.	2·27	11·5	0·59 10^{-7}
50.	2·27	10·	0·68 10^{-7}
100.	2·27	8·2	0·83 10^{-7}
200	2·27	4·4	1·54 10^{-7}
250	2·27	2·6	2· 6 10^{-7}
300	2·27	0·68	10·00 10^{-7}
310	2·27	0·31	22·00 10^{-7}
318	∞	0·	10^{-7}

It will be seen that the H ion concentration changed very slowly at first. Not till between 100 and 200 grammes of acid were added was the neutral point, H ion concentration 1×10^{-7}, passed. Not till more than 310 grammes were added, was there free HCl, and with this point a great jump in H ion concentration occurred, owing to the great dissociation of hydrochloric acid. In this experiment the CO_2 was not allowed to escape. In the body it would escape through the lungs, and in consequence, it would

take much longer for the neutral point to be reached. This loss of CO_2 is therefore one of the body's first defences against the danger of acidosis.

This mechanism is, however, by no means the only defence. In the body, any tendency to acidosis tends to convert the Na_2HPO_4 of the blood stream into the acid salt NaH_2PO_4. The blood is, as we have shown, alkaline, containing Na_2HPO_4 rather than the acid salt. Yet the urine is acid. The kidney continually removes acid from the body. This is a great defence.

In the equation represented above, $NaHCO_3 + HCl = NaCl + CO_2 + H_2O$, the sodium chloride produced would also be removed from the body by the kidneys. This excretion of neutral salt and acid phosphate, as well as carbonates and other normal acid constituents from the body as salts tends, as may be seen, to decrease the amount of the fixed bases, sodium, calcium, potassium, and magnesium, in the blood and tissues, and should large quantities of acid be introduced into the body, it would form a veritable danger owing to loss of these bases alone, as their excretion would exceed their absorption from the food. Against this danger, the human body is also in part protected. Whether the urea excreted is normally produced in the body from ammonium carbonate or not we hardly need to discuss. As a fact, we find that when acid is poured into the blood stream, less urea and more ammonium salts are excreted in the urine. This may be expressed in equation form thus: $CO(NH_2)_2 + 2H_2O = (NH_4)_2CO_3$, $(NH_4)_2CO_3 + 2HCl = 2(NH_4)Cl + CO_2 + H_2O$. This is a most important protective mechanism in all carnivorous animals, man included; but although it does much to prevent the body alkali being lost in the form of salts, we find that when an acid pours steadily into the blood from any source, there is at first a very definite loss of fixed bases. Indeed, the poorer the body becomes in fixed base (Na, K, Ca, Mg,), the more efficient a part the ammonia seems to play. Hence it is that estimations of the ammonia content of urine throw some light on the condition of a patient who is being poisoned with any acid.

The character of the acid produced or injected into the body produces, however, important differences in the character and amounts of base lost. Luithlen,[2] for instance, showed that rabbits fed on a constant diet, when poisoned with hydrochloric acid lost sodium, potassium, calcium, and magnesium. There was a gradual demineralization, but the losses of sodium and potassium were greater than that of the other bases. Animals poisoned with oxalate seem to suffer more markedly from a loss of calcium.

If the word *acidosis* be only used in a restricted sense, such condition only supervenes when the H ion concentration rises above that of pure water, namely 1×10^{-7}. This probably only occurs, in man, in the severest types of diabetes. In a wider sense, the word may be used of any case where the H ion concentration rises above the normal, which is about $0{\cdot}44\times10^{-7}$.

The physiological conditions in which this increase in H ion concentration most frequently occurs is undoubtedly that of hard muscular work. In this case, the metabolism of the muscles is far from complete, and considerable amounts of lactic acid appear in the blood stream, increasing the hydrogen ion concentration; and this is one, at least, of the causes of the increased respiration that occurs. This increase of lactic acid production undoubtedly in part explains the soreness of the muscles which may supervene. It is found, too, that under these circumstances, there is a greater calcium loss than is usual, and this factor may, in part, account for the soreness, as it seems to do in the stiffness of oxalate poisoning.

In starvation there is a disturbance of metabolism such that there is a marked increase in the excretion of acetone, β oxybutyric and aceto-acetic acid, and a relative acidosis.

In the milk sickness of cattle and sheep, as well as in man, this too seems an important factor.[3]

It is in diabetes mellitus that we find the most marked changes in H ion concentration. Though exact and direct measurements to show this are difficult, and the results so far obtained are not numerous, there seems no doubt that it occurs, and in some cases to such a marked degree that the H ion concentration rises at least to that of pure water, or even higher. We have important confirmatory evidences of this change: the first, and least important, being the great increase in ammonia in the urine; the second, the change in the CO_2 content of the alveolar air. It will perhaps be profitable to examine this more at length; and to introduce certain technical methods of expressing this change, which are being commonly employed at the present. The total atmospheric pressure or tension, 760 mm. of mercury, is the sum of the tensions of the various gases in the atmosphere. As oxygen forms some twenty per cent., its tension is 158 mm., and as only 0·04 per cent. CO_2 is present, its tension is only 0·3 mm., the balance, 601·7 mm., being due to nitrogen and water vapour. In the air in the alveoli, the percentage of oxygen is only 15·4, the tension being 120 mm. The CO_2 is roughly 5·2 per cent., with a tension of 40 mm. If

one ascends a high mountain where the atmospheric pressure is less, the pressure in the alveoli will also be less. Were the percentage of CO_2 in the lungs to remain the same, its pressure would be less; and in consequence some of the H_2CO_3 of the blood stream would break up, and the percentage of this acid in the blood and the hydrogen ion concentration would fall; and, as may be seen, the character of the respiration would change. The changes, however, do not take place in this way. The body, probably through the kidneys, tends to keep the H ion concentration constant, and we find that respiration so changes that instead of the percentage of CO_2 in the lungs remaining the same, it increases until its pressure reaches that under normal atmospheric pressure, namely, 40 mm. There is a decrease in the ventilation of the alveoli. This may be brought about by a change in rate or in depth or in a combination of these. The point is that it is the tension of CO_2 in the alveolar air, and not its percentage, which varies with the H ion concentration of the blood. Kennaway, Pembrey and Philips[4] have clearly shown that in starvation this CO_2 tension falls as the excretion of acetone bodies rises, and in diabetes this fall is always a precursor of coma, and may reach extremely low figures in fatal cases of coma. Such a fall undoubtedly means a very marked rise in H ion concentration and a marked decrease in the $NaHCO_3$ and Na_2HPO_4 of the blood stream.

Such are the chemical facts. Can we refer any of the symptoms of acid intoxication to this rise in hydrogen ion concentration alone? This question it is impossible to answer as it stands, since hand in hand therewith the change in CO_2 tension in lungs and blood stream, and the decrease in fixed base occur. They are, indeed, the opposite side of the same chemical picture. The question is then best worded: Can we refer any of the symptoms of an acid intoxication to the rise in H ion concentration, the change in CO_2 tension, and the decrease in fixed base in the body? All types of acid intoxication seem to show some muscular pains and stiffness, a subnormal temperature, and some mental dullness, which is preceded by weakness, and some change in respiration (lung ventilation). Symptoms due to these causes one should be able to relieve by the injection of sodium carbonate or bicarbonate. The simply wonderful temporary recovery that many patients make when showing serious symptoms of diabetic coma, when this procedure is resorted to, may be taken as a proof that these changes are in large part responsible for the production of coma. Kennaway, Pembrey, and Poulton administered large doses, 600

grs., to a diabetic patient whose alveolar CO_2 tension was below normal, 31 mm., and as a result the CO_2 tension rose greatly, to 37·8—40 mm. This serves to emphasize how necessary this treatment is. Large doses of bicarbonate or carbonate are necessary. Magnus-Levy[5] from the analysis of the body of a patient who died of diabetic coma, estimated its content of β oxybutyric acid as 1·5 g. per kilo. Such a quantity would, in the case of a man of a hundred and thirty-two pounds, require almost 3 ounces of $NaHCO_3$ or 5 ounces of carbonate to neutralize it. Sodium carbonate, if injected subcutaneously, usually causes necrosis. Bicarbonate solutions, if sterilized, lose so much CO_2 that they are largely converted into carbonate. Magnus-Levy[6] has suggested that such a solution of 40 grammes of bicarbonate in one litre of water, and containing a little phenolpthalein as indicator, should be changed back to bicarbonate by bubbling through it CO_2. When the red alkaline colour fades, it may be injected without producing necrosis, or may be given in large amounts intravenously, when, indeed, it improves the action of the heart and the general circulation.

The fact, nevertheless, remains that we cannot certainly as yet refer diabetic coma to acidosis and its accompanying conditions alone. First, coma comes on relatively rapidly, even when patients are taking large doses of bicarbonate, and even, according to Van Noorden,[7] when the urine is alkaline. Secondly, intravenous infusion of carbonate often gives a very temporary relief. Whether in these cases not enough has been given or not, we do not as yet know. In no such case has the degree of acidosis been accurately estimated. Thirdly, symptoms resembling diabetic coma in all respects, unconsciousness, marked expiratory dyspnœa, fall in blood pressure, and weak pulse, have been produced in animals by Ehrmann[8] and his pupils by giving *per os* or intravenously large doses of sodium butyrate, oxybutyrate, and aceto-acetate. In his experiments, neutral salts have produced the symptoms. It may be noted in parenthesis, that he has shown that in these animals there is a fall in CO_2 tension, though he fails to show how neutral salts can produce this effect; and he has not proved that there is no acidosis. Consequently, we are led to look for a further explanation, and this, it seems to me, is suggested by the fact that all these acids are relatively good precipitants of calcium. In the early stages of acetonemia there is a relatively great loss in this base. We may assume that a diabetic patient excreting acetone is soon poor in it. Such an assumption accords with the

findings of Luithlen, Chiari,[9] and others, that when an animal is poor in calcium, it is more liable to moist eczema and various erythemata. It will also be more liable to boils, etc. These, we know, occur not uncommonly in diabetes. Certain disturbances, too, of the balance between calcium and the other salts will account for muscular pains, weakness, and even coma. All these symptoms we find also in poisoning by oxalate, another precipitant of calcium. It may well be that an excessive lack of calcium as compared with the other bases not only comes on during the feeding of sodium bicarbonate, but is even aggravated by it; and that relatively suddenly the dread symptoms appear, even if there be no acidosis.

There remain but two types of acidosis. Neither of these require a lengthy discussion at present. First, the relative acidosis that occurs when there is respiratory trouble, and accumulation of CO_2 in the lungs, alveoli, and blood stream. This is rarely severe, and its chief symptom is dyspnœa, though in some cases muscular stiffness and aching are complained of.

Secondly, Lewis[10] and his co-workers have described a type of acidosis in certain cardiac patients, which in its purest form has as its chief symptom marked dyspnœa without cyanosis. Using a method for indicating acidosis devised by himself, Barcroft thinks that he can show that these patients suffer from acidosis. Yet there is no abnormal constituent in the urine or blood (lactic acid or acetone bodies) to indicate a metabolic derangement. They consequently suggest that there is probably a derangement of kidney function such that the acid bodies usually excreted are not got rid of in a normal fashion.

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THE MENTALLY DEFECTIVE

By G. S. Mundie, B.A., M.D.

Clinical Assistant in Neurology, Royal Victoria Hospital, Montreal

THE story of the treatment of the feebleminded is the story of any great movement where the opinions of man vary from one century to another. It is a history of persecution followed by kindness and training, to be followed again by persecution. Among the ancients, mental defectives were objects of derision, aversion and persecution, were without rights or privileges, accursed of the gods. They were allowed to perish or as was done in Sparta, were got rid of by exposure or violence. Among the Romans, and until recently among certain South Sea Islanders, this custom was prevalent. Some escaped, although plainly set apart and hedged about by ridicule or scorn, or tolerated only for the sake of diversion and amusement. Others again reached exalted positions as Nero, Commodus and Elagabalus, three wearers of the imperial purple.

With the dawn of Christianity the first gleam of beneficient commiseration and divine pity appeared on the horizon; the most notable leader in this movement being the good bishop of Myra—the St. Nicholas of the children to-day—whom we find recognizing and tenderly caring for the idiot and imbecile. In mediæval times, as fools and jesters, they had the freedom of the castles of the great, or regarded as "les enfants du bon Dieu," they wandered unmolested in Europe as well as in the Orient. Again viewed with superstitious reverence and even fear, as being mysteriously connected with the unknown, the house into which an imbecile was born was considered blessed of God. Even to-day among the Turks and in many parts of Brittany and Brazil this extravagant idea regarding these "innocents" prevails.

Confucius and Zoroaster in their writings both enjoin a tender care of these unfortunates and the Koran gives this special charge to the faithful, "Give not unto the feebleminded the means which God hath given thee to keep for them, but maintain them for the same, clothe them and speak kindly unto them."

In the days of the Reformation, however, the pendulum

swings the other way with resulting persecution and we see Martin Luther and Calvin denouncing them as "filled with Satan."

During the seventeenth century we find recognized effort being made to help the mental defective at the Bicêtre, the present large asylum and hospital in Paris. Among those who carried on this movement to aid these poor unfortunates were Boerhaave, at the University of Leyden; Morgagni, University of Padua; Rousseau and Péreire, the latter being the first to evolve the power of oral speech for the deaf mute. Next we find Itard, Esquirol, Ferrus, Voisin, Sequin, Vallée and others all engaged in finding the best means of training mental defectives.

To Sequin we owe the greatest debt as it was he, working in his own private school and also at the Bicêtre, who put the training of the feebleminded on the basis it occupies to-day, and whose book, "The Theory and Practice of the Education of Idiots", is still recognized as an authority on such work. The results of Sequin's experience, the necessary requirements and the programme of education, are briefly embodied by him in the following abstracts. The necessary conditions for the improvement of imbeciles are that "the treatment be not only hygienic but moral; that the education be not putting in action of acquired faculties, which is the education of common schools, but the development of the functions, of the aptitudes, of the faculties, and of the instinctive and moral tendencies."

France, the country that provided such men as Péreire, Rousseau, Itard and Sequin, is still years behind other nations in providing for the care of mental defectives. In other countries we have to mention Howe of Boston, Saegert in Germany, Reed in England, and Guggenbühl in Switzerland. The latter is noted on account of his famous experiment with the cretins of his native land. In Germany many of the states took up the question with enthusiasm and founded large institutions for the care of the feebleminded. The articles of Dr. Wm. Twining, in England, on the work being accomplished at the Abendberg, Germany, led to the establishment of, first, Essex Hall and, finally, the magnificient institution at Earlswood where five hundred inmates can be taken care of.

Sequin had been forced to leave France and went to the United States where his work and enthusiasm, along with the efforts of Howe, in Boston, and others, led to the founding of many private and state institutions where the feebleminded are properly looked after, with the result that instead of being a charge and a menace

to the state, they are often able to pay their own way. Among such institutions are the Training School for the Feebleminded at Vineland, N.J., the Pennsylvania Training School for Feebleminded Children at Elwyn.

In Canada very little has been done for the mental defective, and in our own province of Quebec, it does not need the trained eye of the expert to see that there are large members of these poor unfortunates who are a menace to the stability of the country, and I have no hesitation in saying that it would be cheaper for the province to have institutions to look after them than to have them roam at large as at present. There is only one training school in Canada and that is the one at Orillia, Ontario.

Classification. Mental deficiency, or amentia, is a state of mental defect from birth, or from an early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position of life to which he is born (Tredgold).

Mental defectives are divided into three classes, idiots, imbeciles, and morons. This classification is the one adopted by the American Association for the Study of the Feebleminded and the terms are those usually employed in this country. In place of the term "moron" the English use the word "feebleminded" and the French "débile." The definitions of these three classes as adopted by the above named association are as follows:

Idiots are those so defective that the mental development never exceeds that of a normal child of about two years.

Imbeciles are those whose development is higher than that of an idiot, but whose intelligence does not exceed that of a normal child of about seven years.

Morons are those whose mental development is above that of an imbecile, but does not exceed that of a normal child of about twelve years.

The definitions suggested by the Royal College of Physicians of London, and adopted by the Royal Commission on Feebleminded were:

An idiot is a person so deeply defective in mind from birth, or from an early age, that he is unable to guard himself against common physical dangers.

An imbecile is one who, by reason of mental defect existing from birth, or from an early age, is incapable of earning his own living, but is capable of guarding himself against common physical dangers.

A feebleminded person is one who is capable of earning a living under favourable circumstances, but is incapable from mental defect existing from birth, or from an early age, (1) of competing on equal terms with his normal fellows, or (2) of managing himself and his affairs with ordinary prudence.

Further, all the above classes are divided into three subclasses, high, medium and low.

Etiology. When discussing the etiology of mental deficiency, one cannot say dogmatically that there is one cause, in view of the countless influences of heredity, environment and accident enveloping the human organism from the moment of conception to that of dissolution. However, for purposes of classification mental deficiency can be more or less accurately divided into primary and secondary deficiency. Primary deficiency is the result of morbid heredity, such as mental deficiency itself, insanity, epilepsy, alcoholism and tuberculosis. Secondary deficiency is the result of environmental conditions under which we may note certain diseases of the brain as epilepsy, vascular and toxic conditions like trauma, asphyxia, infectious fevers, polio-encephalitis, sunstroke, tuberculosis and syphilis. Then there is defective nutrition of the brain as seen in cretinism or those cases where the deficiency is due to the loss of one or more of the senses.

The all-important cause of mental deficiency is morbid heredity, but one must not forget that the environment of to-day is the heredity of to-morrow, and the statement that the sins of the fathers are visited upon the children unto the third and fourth generation is an undoubted and important physiological truth. Further, a condition of ill health, actual disease, or starvation of the mother cannot but be injurious to the growing embroyo, and the same may be said of improper food, impure air, deficient light and inadequate sleep, which are so often the lot of young children in our city slums.

Two studies on the cause of mental deficiency have been made. One of 2,380 cases, a collaboration of Drs. Beach and Shuttleworth, from the books of the Darenth and the Royal Albert Asylums in England, and the other of 3,050 cases compiled by Dr. Barr from various sources, but chiefly from the records of the Pennsylvania Training School. A comparison of these tables shows an agreement as to the order of periods, the predominating influences in both being found before birth, next in the period after birth, whereas the least are those operating at birth. Dr. Barr's table shows 64·85 per cent. of the whole in the first, 32·23 per cent. in the second, and only 2·92 per cent. in the last named. In regard

to causes acting before birth, the English table shows the largest percentage in the abnormal condition of the mothers during gestation, a record of 711 cases, or 29·87 per cent. The American table places this cause second, 259 cases, or 8·49 per cent., but finds its largest percentage in an heredity of imbecility, 835 cases or 27·38 per cent., which ranks third in the English table, 117 cases or 4·69 per cent. This divergence, as Dr. Barr explains, is more apparent than actual. The high percentage in the English table is ascribed by Dr. Beach to the low physical and mental condition of the parents, in other words the parents were on the border-line of imbecility, a condition easily intensified by poverty and frequent intemperance. Similarly, exhausted vitality due to the excitement of competition, so marked in America, has doubtless contributed to both the first and second causes of Dr. Barr's table.

Tredgold says that 80 per cent. of the persons suffering from the severer grades of amentia were descendants of a pronounced neuropathic stock; in 64 per cent. the heredity was in the form of insanity or epilepsy; in 18 per cent. it consisted of a marked family tendency to paralysis, cerebral hæmorrhage or various neuroses and psychoses. The remarkable history of the Jukes, the Kallikak family and the "Tribe of Ishmael" shows the terrible effect that heredity has on one generation after another. Barr says that the evidence shows, "that the transmission of imbecility is at once the most insidious and the most aggressive of degenerative forces; attacking alike the physical, mental and moral nature, enfeebling the judgement and will, while exaggerating the sexual impulses and the perpetuation of an evil growth, a growth too often parasitic; ready to unite with any neurosis it may encounter, and from its very sluggishness and inertia refusing to be shaken off; lying latent, it may be, but sure to reappear, as Haller recounts, through a century to the fourth and fifth generation."

In regard to the condition of the mother during gestation, Langdon Down, Howe, Tredgold and others all think the mental and physical condition of the mother during pregnancy of great importance. To illustrate this I may mention the results found by Baron Percy, the famous French military surgeon, and Dr. W. B. Carpenter who examined the 92 children born after the siege of Landu in 1793, all of whose mothers were exposed to the horrors of the siege; 16 died at birth, 8 were idiotic or died before they attained the age of fifteen years, 33 more or less defective died within ten months, and 2 were born with fractured limbs.

We will now briefly discuss the other causes: *Tuberculosis* is

undoubtedly a strong contributing factor, but rarely the direct and sole cause. It coöperates readily, in an enfeebled constitution, with any latent neurosis and in this way may cause mental deficiency. *Alcoholism*, like tuberculosis, is more usually a contributing factor than a direct cause. It must also be remembered that alcoholism is often the result of mental deficiency and not the cause. *Syphilis* is not a frequent cause of amentia. It is probable, as stated by Mott, that "there would undoubtedly be a considerably larger proportion of defective children from this cause, were it not for the high rate of sterility, miscarriages, still-born and short lived offspring that it produces." Syphilis may be truly hereditary by impairing the vitality of the germ or sperm cells, so that perfect development cannot take place, or it may be congenital, the actual disease being transmitted to the child through the maternal tissues. Statistics do not prove that *consanguinity* is an important factor in producing feeblemindedness, provided that both families are devoid of any hereditary taint; in fact Langdon Down says, "I am by no means sure that by a judicious selection of cousins the race might not be improved." I shall not say much in regard to the other causes. Difficult labour, asphyxia in the new-born child, injuries before and after birth, infectious fevers, meningitis, malnutrition and convulsions all have a bearing in the production of mental deficiency.

Pathology. Apart from the malformations, such as absence of the corpus callosum, porencephaly, hydrocephalus and sclerosis, the pathological findings in a case of amentia are numerical deficiency, irregular arrangement, imperfect development and pigmentation of the nerve cells; diminution of the fibres, expecially in the outer line of Baillarger and in the frontal and parietal lobes; and an overgrowth of neuroglia. Incompletely developed nerve cells occur in all layers, but mostly among the medium and small pyramidal cells of the second and third cortical layers. In view of the fact that these cells are normally among the last to attain their full development, also that they are the earliest and most affected in dementia resulting from epilepsy and chronic insanity, this fact is of considerable interest. The area most affected is the prefrontal and next the parietal.

Physical Characteristics. I shall only attempt to point out the most common physical characteristics. In examining a child for mental deficiency one notes any defects of the ears, as anomalies of size or shape; defects of the eyes, nose, lips and tongue. Especially in mongolism one finds a large, flabby and fissured tongue.

In the osseous system abnormalities of the skull as regards size, shape, asymmetry and bosses will be found. The palate is usually saddle or V-shaped. The jaws may be small and receding or occasionally protruding. Primary and secondary dentition are often delayed and there may be irregularities of position, number, form, size and condition of the teeth.

The circulation may be feeble as evidenced in cyanosis, subnormal temperature and a tendency to chilblains.

Mental Characteristics. There are three elements necessary for sensation: a peripheral sense organ, a transmitting nerve, and a central receptive ganglionic area. As has been shown in discussing the pathology of mental deficiency the chief cause of sensory imperfection is the defect of the third element or a central ganglionic area. Vision may be affected owing to errors of refraction, old corneal ulcers, strabismus or nystagmus. Hearing is often defective in one or both ears owing to a congenital defect or inflammation of the middle ear. The cutaneous and muscle sensibility is impaired, and this impairment increases with the degree of amentia.

Attention is always below par although often voluntary, in contrast to involuntary attention which is present in a large number. Owing to either poor attention, faulty perception, or both, association and memory are very poor. Mental defectives are unable to describe from memory. Usually imagination is very defective, but in some defectives there is considerable as shown by their skill in drawing. Ideation, on account of defects in attention, perception and memory is limited. Their life is one of perceptions, not of conceptions. Judgement and reasoning are very defective. The moral sense is generally lacking, to a greater or less degree.

The temperament of these patients may be one of four kinds: (1) choleric, where the excitability is great, and the after-effect is great; (2) sanguine, where the excitability is great, and the after-effect is small; (3) phlegmatic, where the excitability is small, and the after-effect is small; (4) melancholic, where the excitability is small, and the after-effect is great. Most mental defectives are phlegmatic, some are sanguine and a few, chiefly of the mildest grade, are melancholic.

Owing to the generally diminished excitability of the nerve cells there is deficiency of movement; the child never cries, sucks, nor looks about him like an ordinary child and is backward in attempting to sit up, stand and walk. In contrast to this we may find excessive movement where there is a chattering, ceaseless

activity which usually develops into tics. There is also often incoördination of movement; the child is awkward in handling himself or objects.

Defects of speech are common. The attempts at speech are late in appearing, the child may be seven or eight years before attempting to say the simplest words and then it is very poorly done. There may be echolalia, a tendency to repeat words or phrases spoken by others, or coprolalia, a tendency to repeat foul language.

DIAGNOSIS. The diagnosis of mental deficiency is often very difficult, except in the severer grades, and the physician must be very careful before pronouncing a child feebleminded.

The history of the patient must be most carefully enquired into, for several generations back, on both the maternal and paternal side, for any trace of feeblemindedness, insanity, alcoholism, tuberculosis, epilepsy, or any neuropathic taint. Next, the history of the child must be thorough, both before and after birth. What was the condition of the mother, physically and mentally, during gestation; was the child born with or without instruments, and was it a hurried or a protracted labour. How many children did the mother have before the patient was born and were there any miscarriages. After birth did the child have any illness, convulsions, or accident. When did he have his first teeth, when did he begin to talk and walk; was he properly nourished during infancy.

After taking the history, a complete physical examination should be made. The skull should be measured and any asymmetry, bosses, or other abnormalities noted. The ears and eyes should be examined for any defect in hearing or vision and for any anomalies of their physical characteristics, any difficulty in walking, standing, holding objects in the hands or any other incoördination should be looked for. Finally a careful examination of the heart, lungs, and kidneys should be made.

For children over three years of age tests can be made of their mental capacity. There are several different kinds of tests employed, but the one most used and recognized as the best is the set devised by two eminent French physicians, Binet and Simon. These tests have lately been revised in order to meet with our increasing knowledge of feeblemindedness. The tests consist of graded questions for children from the age of three years to fifteen years; questions which Binet, after many experiments with normal children, found to correspond to the different ages. I shall not attempt here to explain these tests, as they can be found in any

book on this subject, but they test every part of a child's mental capacity.

It must be understood, of course, that these tests are not absolutely accurate, but they enable us to divide children into more or less clearly defined classes, and in this way we are able to get a clearer view of mental deficiency. They enable us to determine the child's intellectual level. Certain important practical data are obtained concerning the child's ability to read, write, draw, and use language, numbers, money, etc. Also the tests open up the case for varied observation, giving the examiner opportunity to make supplementary notes of the child's attitude, his emotional condition, his speech, movements and various other characteristics of his responses and conduct.

As a rule a child showing three years or more retardation is feebleminded, but not necessarily so. The amount of intellectual retardation may sometimes be very slight and yet the mental defect may be very grave, fundamental and incurable. Prognosis must therefore be reserved in such cases. Some of these less retarded cases are more distinctly of the feebleminded kind than some showing three or more years of intellectual retardation.

Mental deficiency is a defect of the higher centres, not a disease. Therefore, there is no cure for it. Improvement, however, and often great improvement, can be obtained by suitable training and treatment.

Treatment and Training. The first thing to be done in the treatment and training of mental defectives is the testing of the various sense organs so that any defects may be remedied by surgical or medical treatment. In this way any errors of refraction in vision, any defect of hearing, taste and smell or enlarged tonsils and adenoids would not be overlooked. After this the training can be commenced. Naturally the only proper place for the feebleminded is in an institution situated in the country and surrounded by enough land to enable the patients to pursue an open, healthy life, and to give industrial employment to them. All the training must be done through the senses and every sense must be stimulated to its physiological limit. Until the age of seven the physical side alone should be attended to and not before seven should any education be attempted, not even kindergarten work, although this may be modified in individual cases. The muscular and tactile sense should be especially developed, as often improvement may be obtained through these channels when the other senses are not responsive. Education by classes is much better

than individual tuition as imitation plays an important part in the life of children. All attempts at "cramming" should be avoided. Industrial training and household occupations are very important in the training of the senses, and these along with musical and military exercises will do much to improve a feebleminded child.

The best method from the standpoint of training through the senses is the Montessori system, devised by an Italian doctor and psychologist. The fundamental principles of the system are the complete liberty of the child in its spontaneous manifestations and the utilization of every action of its natural energy. The child is taught to think and act for himself. The teaching is almost entirely individual and the three fundamental rules for lessons are that they shall be brief, simple and objective. No superfluous words must be used in giving the lesson, since they tend to confuse the child and to distract his attention from the main point, and the teacher must not insist on the repetition of a lesson against the child's inclination, and she must not let the child know that he has failed or has not understood.

SUMMARY. Mental deficiency is a defect of the brain, not a disease. It cannot be cured, but the condition of the child can be improved to a greater or less degree by careful and suitable treatment and training. The greatest etiological factor is heredity; other important factors are the condition of the mother during gestation, tuberculosis, alcoholism and injuries after birth.

All mental defectives should undergo a thorough medical examination and any defect in vision, hearing, or enlarged tonsils and adenoids corrected. Training should be carried out in institutions, and the teaching should be objective.

The problem of our feebleminded children is one which must soon be considered by every province in Canada. It is a vital and one of the most important elements in determining the stability of any country; it is a factor which attacks the very foundations of a nation. Segregation, which will prevent procreation and enable us to give every feebleminded person the proper treatment and training, is the only solution.

ON THE DESTRUCTION OF SEBACEOUS GLANDS, SWEAT GLANDS, AND HAIR FOLLICLES, AND THE DISEASES THEREBY CURED

By A. Howard Pirie, M.D.

Montreal

A NEW drug to a medical man is like a new golf club to an old golfer, or a new tool to an experienced workman. It is always of interest, and yet it is not trusted till it has proved its value. As the skilled workman could get on very well without the new tool, so can the doctor without the new drug. As the artisan becomes skilful in the use of his new tool, so does it become valuable and even indispensable to him, but if he acquires no skill in its use, he says it is useless, and discards it. So are *x*-rays in the hands of the medical man for the cure of certain diseases of the skin. He can get on very well in some diseases of the skin without *x*-rays. I take, for instance, ringworm. For generations the family doctor has cured this disease by remedies which vary from writing ink to strong sulphuric acid. Yet the number of the remedies is a proof that none of them is a sure and quick method, and no one would promise a cure in, say, a month, with the whole pharmacopœia at his command.

In such a case a remedy which will produce a cure—not in one or two or three months, but in exactly four months, may be called a specific for the disease. Such a remedy is to be found in *x*-rays, and in *x*-rays alone. Yet it is not possible for any medical man to apply this remedy without experience and practice in the use of *x*-rays. The subject of this paper is to show why certain diseases of the skin are cured by *x*-rays, and to lay down certain laws for use in the application of the rays.

X-rays have no selective action on diseased cells, but they can destroy every kind of living cell. An analogy can be made to the action of heat on a melting-pot containing bits of lead and iron. At a low temperature the lead will melt, and at a higher temperature the iron will melt, but the heat has not a selective action on the lead, which it melts before the iron. So in the skin there are quickly-growing cells which represent the lead, and slowly-growing

cells, which represent the iron, and by giving a moderate quantity of *x*-rays the quickly-growing cells are killed, and by a larger dose the older cells are killed. The quickly-growing cells are at the roots of the hair follicles and in the glands of the skin, and these are the first to be killed by *x*-rays.

As the growing cells of a baby's body are more easily killed than the comparatively stationary cells of the adult's body, so the cells of the adult's body which are undergoing karyokinetic division, are more easily killed than the stationary cells beside them. The karyokinetic cells in the adult are found in the cells of glands, hair follicles, and malignant cells. The diseases of the skin most amenable to *x*-ray treatment are those in which the disease thrives owing to the presence of the more active cells in the skin, viz., the sweat glands, the hair follicles, and the sebaceous follicles, and of abnormal quickly-growing cells, as in rodent ulcer. The action of *x*-rays may be compared to that of a blow. A small dose is like a tap which calls forth reaction and acts as a stimulant. The next is the knock-out blow, which causes temporary stunning of the cells and temporary cessation of growth. The next is practical destruction, some cells escaping death, while others are killed. Finally there is total destruction of all cells.

X-rays, in small quantity, stimulate all the cells of the skin, and this causes increased activity of active cells, thus causing increased growth of hair and increase in perspiration. I have noticed this increased growth of hair in cases where the neck has been treated for tuberculous glands. In such a case the face was protected against the rays by a sheet of lead. As the treatments were given by small doses two or three times a week, the position of the protective lead suffered a slight variation at each treatment. Thus the skin received a graduated dose, from zero, where the skin was always totally protected, up to the maximum, where it was never protected. A photographer would call this vignetting, and at a special part of the vignetted area of the skin, the hair follicles were stimulated, the hair grew faster, and this patient, who was a lady, had a little bunch of hairs on the side of her face, which rather annoyed her. When the treatments were stopped, the hairs ceased to grow, and after the lapse of a year, when I next saw her, there was no indication of the previous overgrowth of hair. All through the treatment the downy hair, which grew unusually long, retained its downy character, so that by cutting the hairs short with scissors, it presented the same appearance as the rest of the downy hair on the lady's face.

In the treatment of cheloid this stimulating action of *x*-rays is made use of. When the rays fall on the hair follicles in larger quantity the knock-out blow is delivered. The hair ceases to grow for two months; it is shed, and a new hair grows, because the hair follicle was stunned only and not killed. This is the treatment carried out for ringworm, sycosis, and alopecia areata. In this treatment a temporary change is brought about without causing permanent destruction.

The third degree is partial destruction, in which some cells are killed and others are not. This may be brought about by two methods, just as sterilizing by heat can be done by boiling or by raising to 57°C. on eight consecutive days. When blood serum is raised to 57°C. on eight consecutive days the albumin is not coagulated, yet all germs are destroyed. So with the skin and *x*-rays, by delivering a large dose once every three weeks certain cells are killed, while others escape. This principle is used to cure hyperidrosis, hypertrichosis, acne vulgaris adolescentium, bromidrosis, and rodent ulcer. If we attempted to cure these diseases by one large dose we would succeed, but at the same time we should be risking total destruction of the skin. I have on one occasion cured hyperidrosis by two applications, and hypertrichosis by one, but the reaction in the skin was so severe that I never attempted it again.

The fourth degree, total destruction by *x*-rays, I have only carried out on a few special occasions. One case, as an illustration, was that of a tumour, probably epithelioma, of the point of the nose. In this case a surgeon would have had to cut off so much of the nose that a false one would have been necessary. Very large doses of *x*-rays were applied, so that the tumour cells were killed outright, and the surrounding cells of the skin grew in and covered over the site of the tumour.

These four degrees of *x*-ray dose are measured in various ways. I am in the habit of using four methods at once, each method is thus a control on the other, and when all agree I feel perfectly sure that the patient has had the dose I wished to give. The four methods are:

1. Sabouraud's method;
2. A modification of Sabouraud's;
3. Kienbock's method;
4. Measurement of the energy passing through the *x*-ray tube.

Any one who attempts treatment by *x*-rays must first make himself master of the first method. Without it he gropes in the dark, and like a blind man he may arrive safely at his destination. This method is simple, and full instructions accompany the pastilles used. These can be procured from Leslie Miller, 66 Hatton Garden, London, England. Only one extra precaution is necessary in using the pastilles in Canada, viz., when the temperature outside is below zero and the air inside very dry, the pastilles must be kept in a humidor, otherwise they will very quickly become useless. In order to overcome this difficulty during transit from England, Leslie Miller sends them out airproof in waxed paper and lead foil. The humidor I use consists of a glass sponge jar with a lid. Into this I pour water to the depth of half an inch, and in this I stand a small tumbler holding the pastilles. They are thus always exposed to the light and to moist air. For the first six months I was in Canada I could not find out why the pastilles did not measure the dose as they did in England. The difference in humidity struck me as a possible cause, and during the past year and a half I have had no further trouble, so long as I kept the pastilles in a moist chamber. Although the method is simple, it is very necessary to learn it from watching an experienced worker carrying it out, and not from books. A mistake in treating a child's scalp might cause no epilation, and it might cause permanent epilation, according to the dose given. To learn the method from a book would be running the risk of the economical parent who owned one of those famous works entitled "Every man his own family doctor," or some such name, and made such good use of it that he finally had to call in a medical man, who warned the amateur that he and his family would probably die of a misprint.

The unit measurement for treatment is that amount of *x*-rays which will bring out the hairs of a child's head without causing redness or permanent baldness. In countries where ringworm is common, as in France, England and Germany, the *x*-ray worker becomes expert from practice in measuring the dose, but in Canada where ringworm is uncommon, the necessary skill is harder to acquire. In Quebec there is greater opportunity from the number of immigrants arriving with the disease. It may be that the dryness of the atmosphere is not conducive to the life of the organism. On the other hand, excessive perspiration is a condition I have found not uncommon in Canada, and as this is very amenable to *x*-ray treatment I shall devote some time to it. Up to the present I have treated about thirty cases of hyperidrosis, and in every

case the result of the treatment has been very gratifying. There are two distinct types, one ordinary excessive perspiration on exertion, heat or excitement, but the other variety goes on all day irrespective of the aforementioned conditions. The latter condition, which I described in the *Lancet*, in 1911, as hyperidrosis frigida, begins after rising in the morning, and goes on till evening. It usually stops in the evening, and always ceases during sleep. When it is the hands which are affected, they may be dried with a towel, and then you may watch the beads of perspiration rise and run together in three minutes, and drop from the finger tips in five minutes. When the armpit is affected the clothing is soaked through and wringing wet by the afternoon, and a change of clothing is necessary for comfort. It rots the clothes, and a white line is left by the salts of perspiration when the water evaporates. One patient told me he had had what he called his "high-water mark" for the last thirty years. In such cases as these six applications of *x*-rays in suitable doses at intervals of a month have in my practice cured every case so treated. The dose used is known as 10 X or 5 H, according to the method used for measuring it. Not only is excessive perspiration stopped by this treatment, but even normal perspiration is also stopped. The latter has been brought to my notice from the treatment of a case of splenic leukæmia. In this case the whole body except the head, armpits, and inner surface of the thighs received doses of *x*-rays sufficient to destroy the sweat glands. When the patient's temperature rose to 103° during the later course of the disease, he perspired freely on the untreated parts of the body, but those parts treated by the rays remained quite dry, and showed no trace of perspiration. After *x*-raying the skin of the axillæ so as to destroy the sweat glands, I had a piece sectioned and examined in the pathological department at St. Bartholomew's Hospital, London, Eng. The report that I received from the pathologist stated that no hair follicles nor sweat glands could be found, and that the skin took the stain badly. This accounts for the fact that when hyperidrosis is cured by *x*-rays it does not return. I have had reports from patients one and two years after treatment had been stopped, and no recurrence had taken place in any instance.

In treating hypertrichosis I now employ the same method, viz., one treatment a month till six treatments have been given, and by this method I have had the satisfaction of seeing superfluous hairs disappear with no disfigurement. The analogy between this method of treatment and sterilization by fractional heat seems a

very natural one. The attempt to remove superfluous hairs from a lady's face by one *x*-ray treatment is dangerous, usually unsuccessful, and now practically given up. Some people have a tendency to browning of the skin when treated for a prolonged period, and if this comes on they can be comforted by the assurance that the browning, which looks like tanning by the sun, will wear off just like sunburn, though it may take a little longer to do so. After the fourth treatment the skin grows more sensitive to *x*-rays, and the dose in the last two treatments should be reduced to half.

This is the first occasion on which I have advocated this method in public; it has been gradually coming to me during the last three years, since I advocated the six treatment method of treating hyperidrosis. It now seems natural to me that *x*-rays should act on the hair follicles as they do on the sweat glands; in fact, what's sauce for the goose is sauce for the gander.

It is only a step from superfluous hairs and excessive perspiration to acne vulgaris. In the latter we have germs flourishing in the sebaceous follicles and sweat glands, and by destroying these by *x*-rays we take away the food on which the germs subsist, and so put an end to the disease. The same form of treatment has to be carried out as described for hyperidrosis. But in this case the treatment does not need to be carried quite so far. I have seen the faces of men and women who have suffered from acne for many years clear up perfectly by this treatment. The scars left by the disease subside to a marked extent when no new pustules come out. Any case of acne vulgaris which will not yield to other measures in a reasonable period should be treated by *x*-rays before the face is scarred by the disease. In sycosis affecting a man's beard, only one treatment is necessary to effect a cure. A sufficient dose is given at one sitting to bring out the hairs, and when the hairs are out the disease ceases. After two months' time, when new hairs grow, the disease is gone, and the new hairs are not infected. I might remark here that it is a very different matter to cause epilation on a man's face compared to a woman's. A man's beard comes out easily by *x*-rays, whereas hairs on a woman's face are much more difficult to remove, and should only be removed by the fractional method.

Passing now to rodent ulcer we have to consider the pathology to understand why *x*-rays cure this disease, and why it apparently is cured only to break out again after a few months. In rodent ulcer we have malignant cells growing alongside the old cells of the old man's skin. When a sufficient dose of *x*-rays falls on these

malignant cells, they are killed, and the skin then grows from the edges over the ulcer. But deeper down some of the malignant cells, having received an insufficient dose, have been stunned only, and after two months begin to grow, and the scar breaks down. In order to prevent this occurring two methods are possible. One is, after the ulcer is healed to keep on giving *x*-rays once a month for six to twelve months; and the other is to give a sufficiently large dose at first at one sitting to kill all the deep malignant cells. I consider 20 H and 40 X the dose for this purpose. It may cause a little inconvenience to the patient, as the dose almost amounts to an acute *x*-ray burn, but its effect passes off, and the ulcer heals firmly after the application.

With these remarks I wish to close, and in this country where the latest methods are practised in diagnosis and treatment, I would ask you to adopt a more advanced method when speaking of *x*-ray treatment. Do not refer to the *x*-ray department derelicts of carcinoma, painful stumps, and any old thing that comes along, with a request to "try *x*-rays," but rather send cases such as I have mentioned, with a request for 10 X once a month, or 5 X every two weeks, as you would prescribe injection of 2,000 units of antitoxin in diphtheria, or a certain weight of salvarsan for syphilis. For your guidance I mention the dose of *x*-rays required for treatment of the conditions I have mentioned:

1. Sycosis: 10 X one application to the diseased area.
2. Acne vulgaris: 3 X to the diseased area on three consecutive days. Wait for three weeks and repeat. Continue this till six treatments have been given.
3. Tinea tonsurans: 10 X to the whole scalp, one treatment only.
4. Rodent ulcer: 10 X once a month till ulcer is healed, then once a month for six or twelve more treatments, or 30 X or 40 X for one treatment only.
5. Hyperidrosis: 10 X once a month for four months. Then 8 X for two more treatments.
6. Hypertrichosis. As for hyperidrosis.
7. Cheloid: 3 X once a week for six to twelve months.

With this knowledge a definite scientific course of treatment is carried out, and the out-of-date term of "trying *x*-rays" will be a thing of the past.

Case Reports

A CASE OF PERSISTENT ENURESIS

IT has probably been the fate of nearly all of you to have been confronted with cases of enuresis in children of different ages, and after struggles of varying intensity and duration, you have probably in the majority of instances come out victorious. But there are rather rare cases where the enuresis persists far into adult life, in spite of all treatment, to the detriment of the patient's health and happiness. I have seen only three such cases, although they may be of more frequent occurrence than I suppose. Of the ultimate fate of one I am ignorant; the second I know is still uncured; the third is a patient of my own, and it is to describe the cure effected in that case that this paper is written.

It was my good fortune while in Vienna, in 1912, to study for a time under Dr. Franz Hamburger, Privatdozent for diseases of children at the Poliklinik in Mariannengasse, and I was especially impressed with the remarkable results obtained by this man in the various neuroses, especially enuresis. I can remember us asking him one day what he thought of the various methods of treatment of the latter condition, citing belladonna, colon bacillus vaccine, and other remedies that are in general use and over which there is such frequent controversy. "Gentlemen," said he, "I can cure with any of them and without any of them;" and he could. He was a man of strong character, most likable, and adored by every child in the clinic, and it was apparently by virtue of this nature alone that he performed his cures, although he frequently used some visible medicament such as pills or injection of sterile water to appeal to the minds of the younger, or less easily influenced patients. He had two main rules. If he felt he could not get into sympathy with the patient he would not undertake the cure. If he failed once he rarely tried again, but, as he said, saved valuable time by sending the patient to a confrère, and what was most impressive about the treatment was the complete absence of any of the distasteful tricks which are so frequently employed in suggestive therapy.

It was while I was still impressed with the knowledge gleaned

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from this man of what could be done by legitimate and ethical methods of suggestion that the following case came under my care.

The patient was a girl of twenty-seven years of age, well educated, intelligent and of neat personal habits. She consulted me for various minor ailments, and as I gained her confidence she gave me the following history. All her life she had been in the habit of wetting the bed at night. She did not know at what time the accident occurred as it never wakened her, but she had reason to believe that the time varied and was usually in the small hours of the morning. She would occasionally, for no apparent reason, pass a night without incontinence, and has even gone two or three nights. At one time, as will be more fully described later, she was untroubled by any enuresis for one week while under treatment in Switzerland, but as a rule the bed-wetting was a nightly event. Moreover, she suffered from frequency of micturition by day, much worse in the cold weather, and on several occasions in winter she had involuntary passage of urine while out walking. As a child she was in the hands of many physicians. Belladonna had been pushed to the limit and other remedies tried, but without avail. Kindness and punishment were alike futile. When about nineteen years of age her mother took her abroad to see if the European doctors could accomplish a cure. It does not seem necessary when describing failures to mention the names of the doctors concerned, and you are requested to accept the statement that those consulted were efficient men, and that I have verified the patient's story by direct correspondence with them. The longest time the patient was under the care of any one physician was eight months, which were spent in Berne, Switzerland. There she received continuous and varied treatment; electrical, mechanical and medicinal. The only treatment that had any effect was the injection of some fluid around the spinal nerves in the lumbar region. I wrote to the doctor for more definite information, but received a very civil reply stating that he had forgotten the details of his treatment, but I believe that he reported the case at the time as very unusual. However, whatever the technique, the result was that seven nights were passed without incontinence. Then on the eighth day, while the injection was being given, the needle was inadvertently broken and part remained in the patient's back and had to be removed by operation. The patient was much frightened, the enuresis returned and resisted all further treatment. The patient was also under treatment by a specialist of genito-urinary diseases in London, England, who writes me that he

cauterized the neck of the bladder, but without result. Several Canadian physicians were also consulted, but for the last few years the patient had given up further attempts at being cured and resigned herself to a life of discomfort. Consequently I was at first not asked to treat the condition and did not offer. However, when my opinion was asked concerning the condition, I made an examination and, having satisfied myself that there was no gross abnormality present, stated that I thought the case far from incurable. For it appeared thus: if the patient occasionally had nights in which there was no enuresis and passed a good quantity of urine in the morning, the bladder must be normal in size and capable of containing the proper amount; also the mechanism of control must be efficient when properly exercised. Again, if she suffered from frequency by day, the bladder, far from being insensitive as she had been told on several occasions, must be hypersensitive, either organically or merely from continued, unconscious mental concentration during waking hours. Now there was at no time pain or burning in the bladder region, and the urine was never found to be very acid or alkaline and never purulent when I examined it; therefore inflammation or irritation from abnormal urine required no consideration. There then remained the question of an abnormal mental condition. Now the patient was a bright, intelligent girl, and as said before, very neat in her habits, and the enuresis could not be from carelessness or from a mental deficiency, in the common acceptation of the term. As for an irritating condition acting on an otherwise healthy nervous system, none could be discovered, for the patient was physically normal, had no adenoids and certainly not epilepsy. Now with an ordinary neurosis we ask naturally what first caused it and attempt to remove the cause. In the condition of which I write there was no beginning. It was not a case of acquired neurosis, but the lack of acquisition of a normal function. Hence the indication was to educate the patient's mind to the proper performance of this normal function.

Now this seemed only possible by complete isolation of the patient from family, friends and amusements, and this did not seem possible to obtain. For remember the patient considered her case hopeless, nearly every other physician she had consulted had also assured her she could be cured, but had failed. And it was a question whether she would submit to my treatment. But the matter was decided for her. On September the twelfth I was called to see her and found her on the verge of a nervous breakdown, the cumulative result of a gay winter's season, a strenuous summer and worry over some family affairs. She was apathetic,

inclined to weep without provocation, suffered from indigestion, coated tongue, constipation, and other stigmata of neurasthenia. I at once placed her in a rest cure establishment in charge of an efficient nurse. The daily routine practised was in part that commonly in use for neurasthenia. The patient arose every morning at 7.30 o'clock, and was given a douche of cold water down the spine while standing in a bath of warm water. She was then rubbed with a rough towel until thoroughly warmed and dried. Breakfast followed, being eaten in bed. At a given hour the patient visited the toilet, whether she felt the need or not, and remained seated on the stool for twenty minutes without straining. She returned to bed and rested quietly, sleeping as she felt inclined to; visitors and reading matter were prohibited. Dinner was given her at noon and was followed by a sleep; at 4 p.m. she was massaged; evening meal 6 p.m. No fluids were taken after four o'clock. On paying my first visit after the patient had become accustomed to her surroundings she was talked to as follows: it rested with her whether she would be cured of her enuresis or not. We would help her as much as possible by training her how to use her will power. So far during her life she had merely exercised a passive or defensive force of will. She had often been stubborn, but never creatively forceful. There was nothing the matter with the bladder or nerves thereof; this was reasoned out with her. The normal passage of stimuli from the brain to the bladder-controlling parts had never been properly exercised, and was therefore uncertain and failed during the night while the patient slept. The frequency by day was purely habit. Her duty then, before she retired to sleep, was to concentrate her mind on the fact that she was going to awake when the desire to micturate came, and get up and empty her bladder. It was explained that it had not been the patient's actual fault and no one insinuated that she willingly urinated heretofore, but from now on, with all the help we were able to give her by the added force of our wills, every fall from grace would be attributed to indifference and laziness of her intellect. The patient displayed some indignation at my apparently unreasonable point of view, but on finding the nurse and masseuse, who had been well coached, thoroughly agreed with me she set her mind resolutely to the task.

The treatment started to take effect almost at once. The patient began to waken in the night with the desire to urinate and would be just able to get up in time to prevent flooding the bed. This continued for four nights. On the morning of the sixth day I found the patient exceedingly depressed, tongue coated, lassitude

profound, and was greeted with the news that there had been incontinence during the night. I took her to task for her carelessness and repeated my talk of the first day. Eight nights passed without accident and then she commenced menstruating. Her periods are always severe and this was no exception. The pelvic congestion, the hot water bottle which had been given her, and the general depression resulted in incontinence, on the night of September 23rd. This was the last sign of the enuresis.

Shortly after this the question of the frequency during the day was taken up. The patient was accustomed to urinate as many as four or five times between breakfast and my visit, which was shortly before noon, and several times also during the afternoon. She was directed to hold her urine for a short time after the desire arose, but not long enough to cause discomfort, and fix the attention. As the general condition was by now improved, she was given books to read with instructions to get her mind off her bladder by day, by fixing her attention upon a book and lengthening the time between urinations. At the end of ten days the frequency had disappeared; and with its disappearance the bladder, having become accustomed to holding normal amounts of urine, sent no nocturnal messages to the brain, and consequently the patient slept most of the night through without wakening, and only on occasional nights was obliged to get up and pass her water. On October 1st patient was given soup and milk with her evening meal. She was naturally worried as to the probable result of this first attempt at taking fluids after four o'clock, but was strongly assured that if the increased fluids filled the bladder during the night, the worst that could happen was that she would awake conscious of the desire to urinate, and could get up and empty her bladder. She slept uninterruptedly all night. On October 20th menstruation again appeared, lasted three days, was milder than usual and occasioned no bad results. On October 24th fluids were administered immediately before the patient retired for the night and this caused no discomfort or nocturnal frequency. On October 26th the patient's family were allowed to see her, and on the succeeding days she was allowed to pay short visits to her friends, returning to the establishment at night. On October 30th she was discharged. Her general condition was much improved, the indigestion had disappeared, she looked healthy, happy and self-reliant, and was quite well as regards the bladder condition. There has been no relapse to date, it being, at the time of writing, nearly six months since the last incontinence.

London, Ont. G. C. Hale.

Editorial

THE TRAGEDY OF OLD AGE

THE life of the aged always ends in tragedy, and there is a natural desire to hide the more sordid tragedies out of sight. The interest in the aged is confined to their immediate families. It is sometimes sentimental. More often it is merely dutiful. Occasionally it is not even that. The situation is worse amongst the rich than amongst the poor. The aged poor are nothing more than an encumbrance. Their passing is a negative relief to their relatives, a positive relief to themselves. The irony of the matter amongst the rich is that their taking off is usually of positive value to themselves and to their relatives as well. For them there is an end to misery; for their relatives an end of care, and the possibility, if not the certainty, of sharing in an inheritance.

For the old the young have little sympathy. They may pretend to suffer with them, but in reality they do not. Real sympathy would only increase the sum of suffering; and the young, with the egotism of youth, have an unconquerable aversion from destroying their own happiness by making themselves sharers in a misery they cannot alleviate. For the aged to demand such a sacrifice is in turn a manifestation of the egotism of the old. There is no spectacle more pathetic than a young life sacrificed to the tyranny of kith and kin, and it is the more pathetic when youth is yielded ungrudgingly. Two lives are destroyed instead of one.

Such is the law in western communities. It is the incentive of all labour, lest a man be cast in his old age upon the mercy of his own. That is the tragedy of *Lear*, although one cannot withhold from his daughters a certain sympathy.

They had a sure perception of their father's silliness in bothering with equerries and men-at-arms at his time of life. Amongst the Orientals a different view prevails. The old are venerated whilst they are alive; and their ancestors are venerated not because they are dead, but because they are ancestors. In a roundabout way this fidelity has its own reward. The aged are smitten in their conscience, and assist in their own taking off.

These reflections have arisen from a book entitled "Geriatrics."[1]

Dr. Nascher, the author, also perceives, and says so with much feeling, that there is a natural reluctance to exert one's self for those who are economically worthless, and must remain so. Their appearance, he admits, is generally unæsthetic, their actions objectionable, their very existence often an incubus to those who in a spirit of humanity or duty take upon themselves the care of the aged. And yet the world would be the poorer if it were not for the presence of many of the aged and the suffering. Dr. Nascher puts the matter in its true light when he says that all ulterior considerations are paltry in the face of the physician's self-imposed task to relieve distress and prolong life.

Geriatrics is a new word; but there was a time when "pediatrics" also was strange. It may be of some comfort to the old to reflect that the diseases peculiar to their condition are coming in for especial consideration. The subject was taken up forty years ago by Charcot at the Salpêtrière in a series of lectures which were translated and added to by Dr. Loomis of New York in 1881, under the title of "Diseases of Old Age." Dr. Nascher has now made the subject his own, and he has written a most interesting and valuable book besides.

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[1]Geriatrics. The Diseases of Old Age and Their Treatment including Physiological Old Age, Home and Institutional Care, and Medico-Legal Relations. By I. L. Nascher, M.D., with an introduction by A. Jacobi, M.D. Illustrated. Price $5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

THE SURGEON-GENERAL'S LIBRARY

THE Library of the Surgeon-General's Office in Washington is one of the largest collections of medical books in the world. In many respects it surpasses all other medical libraries. Notably is this the case in the services it has rendered to medical bibliography and in practical usefulness to the profession. To make use of its treasures it is not necessary to go to Washington, for with characteristic liberality books are freely lent to other libraries throughout the continent. This is a privilege which is frequently made use of by Toronto University and McGill.

It is therefore a matter of great concern to the profession that the efficiency and the continued usefulness of this library have been seriously menaced by an amendment which the United States Senate added recently to the annual Army Appropriation Bill The amendment provides that during the course of the present year the Library of the Surgeon-General's Office shall be transferred to, and become a part of, the Library of Congress. Such action was unexpected, and consequently this extraordinary amendment, attached as an obscure "rider" to an important routine measure, passed practically unchallenged.

It is difficult to imagine a reasonable explanation of the proposed change. It is not desired by the librarian of either institution. And there is no room in the Library of Congress for this great collection of books all dealing with a special branch of knowledge. In 1912 the collection comprised 178,741 bound volumes and 317,740 pamphlets. It may be said without exaggeration that for this library to lose its identity and its autonomy, for it to be prevented from fulfilling the functions it has so admirably developed, would be a calamity to the profession, and a blow to the prestige of American medicine abroad.

The Medical Library Association has issued an appeal

to its members to bring to bear whatever influence they can command. It is particularly feared that the publication of the Index Catalogue and the Index Medicus will be discontinued. These prodigious works of reference are familiar to all who have ever had occasion to investigate the literature of any medical subject. They have become well-nigh indispensable. In connexion with them the name of the great librarian, the late Dr. John Billings, is to be remembered with gratitude. Under the appropriate heading "Men and Books," a charming sketch of his life and work, from the sympathetic pen of Sir William Osler, appeared in the JOURNAL of last July. In it the growth of the Library and its Catalogue are traced. The Index Catalogue in its two series now consists of thirty-three enormous volumes; while the Index Medicus, which was an outgrowth from the work on the Catalogue, is an extraordinarily complete monthly index of the medical literature of the world. For a time the publication of the Index Medicus was suspended, and those were dark days for all medical librarians and investigators. It is now issued by the Carnegie Institution of Washington, which Dr. Billings was also instrumental in founding.

It is to be hoped that when the Army Bill is returned to the House of Representatives for its concurrence, this improvident provision for the abolition of the Surgeon-General's Library, an act which would be not unworthy of the Turks at Alexandria, will be happily eliminated. One is encouraged in this hope by the fact that heretofore Congress has always been most generous in its treatment of a library which is one of the great achievements of American medicine.

THE ANNUAL MEETING

PREPARATIONS for the annual meeting in St. John, July 7th to 10th, are well advanced. An outline of the programme in the various sections, as so far arranged, will be found on another page. Particulars of the railway rates which

will be available are also given. The character of the programme is such as should assure a successful meeting. The discussion before the combined sections on intestinal stasis, a subject which is to-day very much to the fore, will undoubtedly be particularly instructive. The formal addresses are in good hands. We learn, however, with regret that Professor Jardine, of Glasgow, who, as we previously announced, was to give the address in obstetrics, finds himself unable to attend. Other arrangements are being made. Permission has been obtained from the Militia Department for the Association to hold its meetings in the new Armoury building at St. John, which is admirably suited to the purpose.

The programme is not yet completed, and those who desire to contribute are requested to send in the titles of their papers to the general secretary, or to the local secretary, Dr. J. S. Bentley. Members who expect to attend the meeting, and who desire hotel accommodation are requested to apply to the secretary of the reception committee, Dr F. T. Dunlop, 142 Waterloo Street, St. John.

PUBLIC HEALTH IN MONTREAL

IMPORTANT changes have recently been made in the Montreal Health Department, which is now under the directorship of Dr. S. Boucher. The work of the department has been reorganized and the name has been changed to the Municipal Board of Hygiene and Statistics. The scope of activity has been extended and now includes several branches which formerly were not under the control of the board. In the past the efforts of the department of statistics have been confined largely to the compilation of vital statistics; it is now proposed that more attention should be paid to statistics concerning the movements of the population, the number of cases of disease, and the influence of certain factors upon the health of the community. This work will be in charge of Dr. E. Gagnon and Dr. M. O'B. Ward. Sanitary

inspection and garbage collection are to be placed under the direction of the board and this, it is hoped, will result in more efficient work. The inspection of food will be in charge of Dr. A. J. G. Hood, and, in future, all milk analysis will be done at the municipal laboratories instead of by the inspectors. It is proposed to place the purification and analysis of the water supply also under the control of the board and to have all tests made at the municipal laboratories. The work of the department of contagious diseases and the medical inspection of schools, which is in charge of Dr. J. E. Laberge, is to be extended and the number of inspectors is to be increased. It is suggested that if the physicians engaged in this work were paid a sum sufficient to enable them to devote their whole time to it and to research connected with it, the results obtained would be much greater. Dr. Boucher suggests also that if the remuneration given to those who possess a diploma of public health were increased, and if the number of hours' work required each day from those who take the special course in hygiene were decreased, these men would be able to give more time to the solution of problems connected with public hygiene to the ultimate benefit of the community. The chief physician of the municipal medical service is Dr. E. P. Chagnon and it is suggested that a neurologist, an oculist, and a surgeon should be appointed; the surgeon, however, would not be required to give all his time to the work of the service. The work of the department of municipal assistance in future will include the prevention of tuberculosis, for which Dr. Boucher asks an annual grant of $1,500, and the prevention of infant mortality, for which the same sum is asked. The publication of a municipal bulletin is strongly advocated, for which purpose an annual grant of $300 would be necessary, and the same amount is requested for the purchase of technical books for the use of the members of the staff. The field of municipal health is a large one and contains many pitfalls. Dr. Boucher has begun well and if, among other things, he succeeds in taking

away from Montreal the unhappy distinction of a heavy infant mortality his efforts will not have been in vain.

THE Chicago Medical Society will hold its third annual meeting of alienists and neurologists of the United States from July 14th to 18th, next. The programme will be largely scientific, but an effort will be made to interest the public as well and one day will be devoted to a discussion of the causes and prevention of insanity, to which the public will be invited. A committee will report also on what constitutes a modern hospital or asylum and on the duties of the State to the physician. Arrangements have been made with the post-graduate schools of Chicago to give a complimentary course, which will embrace internal medicine and surgery, special regional surgery, cystoscopy, *x*-ray work, brain pathology, vaccine making, Wassermann reaction, etc. Physicians who attend the meetings of the society are invited to avail themselves of this course, for which tickets of admission may be obtained from the secretary, Dr. W. T. Mefford, 2159 West Madison Street, Chicago, Ill.

WIDE publicity was given in the press to a shocking accident which occurred recently in a hospital in Los Angeles, when eight patients suffering from syphilis of the nervous system all died within a few days following the intraspinal injection of neosalvarsan. An official report, which is published in the *Journal of the American Medical Association*, March 21st, makes it clear that the usual technique for the subdural injection of salvarsanized serum was widely departed from. The procedure in each case was as follows: Blood was withdrawn from a vein, and the serum secured. To this was added freshly dissolved neosalvarsan solution. The mixture after being heated was placed in a refrigerator for a day before being injected. It is supposed that oxidation took place in the neosalvarsan during this delay. In the method devised by Drs. Swift and Ellis, which has given

hopeful results, and which has not been followed by serious accidents, the drug is first injected intravenously, and then after a few hours, blood is withdrawn. From this is prepared the salvarsanized serum, which after being heated is injected without delay by lumbar puncture.

In all, rather more than two hundred fatalities have been reported following the use of salvarsan, by one method or another. In the Los Angeles cases the unfortunate result was apparently not due to an overdose of the neosalvarsan, as such, or to idiosyncrasy on the part of the victims to arsenic, but to an error of technique. It is to be feared that such an occurrence will bring undeserved discredit upon a useful drug, and a promising new method of administering it.

THE search for the cause of cancer has followed many strange clues. Coal smoke as a cause was the subject of a paper presented by Sir William Bennett at a recent Smoke Abatement Conference in London. Investigations carried on in Nairnshire, the Orkneys, and elsewhere, showed the incidence of cancer to be almost confined to coal-burning districts, while where peat was used the disease was seldom met with. In localities, however, where the peat was of the hard variety, which does not smoulder but burns with a long flame, a comparatively high cancer rate was found. The conclusion drawn from these and previous observations is that a large sulphur content in the fuel is associated with the occurrence of cancer.

A RECRUDESCENCE of smallpox is reported from Sydney, New South Wales. The opposition to compulsory vaccination is still very strong. It is suggested in the *Australasian Medical Journal* that it might be well to abolish public vaccination and to supply practitioners with lymph and pay them a small fee for every vaccination they perform. This would be a more costly procedure but would be an effectual method of dealing with the situation and would not meet with so much public prejudice.

Book Reviews

MODERN ANÆSTHETICS. By J. FREDERICK SILK, M.D. (Lond.). Price 3s. 6d. net. London. Edward Arnold, 1914.

The time has gone by when a casual student was considered quite competent to administer an anæsthetic. The business is now entrusted to skilled hands, and books are written upon the subject. Of these specialists Frederic Hewitt was probably the precursor, and his book on "Anæsthetics" has long been the standard. Dr. Silk has now taken up the theme and he presents in this little book as much as it is necessary to know. The book is the outcome of experience and it lays especial stress upon those unforeseen difficulties which are so often encountered. It will prove itself to be a sure guide.

IMMUNITY. METHODS OF DIAGNOSIS AND THERAPY AND THEIR PRACTICAL APPLICATION. By DR. JULIUS CITRON, of Berlin. Translated from the German and edited by A. L. GARBAT, M.D. Second edition, revised and enlarged. Illustrated. Price $3.50 net. Philadelphia, P. Blakiston's Son & Company, 1914.

It is not surprising that a second edition of Dr. Garbat's translation of Dr. Citron's "Immunity" has been demanded within a year. The book has already been translated into Italian, Spanish and Russian. In this edition the discussion of tumours and of anaphylaxis has been enlarged, and chemotherapy is much more fully considered. The treatment is critical as befits a book which is intended for the clinician; and yet it is neither meagre nor superficial.

THE BRADSHAW LECTURE ON THE BIOLOGY OF TUMOURS. By C. MANSELL MOULLIN, M.A., M.D., F.R.C.S. Published by request of the Council of the Royal College of Surgeons of England. Price 2s. 0d. net. London : H. K. Lewis, 1913.

This is one of those charming lectures which emanate occasionally from the English schools; broad and simple in its treatment, and yet presenting the subject in a new light. There is no

attempt at didactic teaching, no cataloguing of facts, no estimate of rival theories; but there is wisdom expressed in a literary way, with humour and pretty turns of phrase—altogether an evening's entertainment.

PAIN: ITS ORIGIN, CONDUCTION, PERCEPTION, AND DIAGNOSTIC SIGNIFICANCE. By RICHARD J. BEHAN, M.D., Dr. Med. (Berlin). Illustrated. New York and London. D. Appleton & Company, 1914.

The mystery of pain is as old as medicine. In modern times Hilton's "Rest and Pain," published in 1877, was the best consideration of the subject. In 1908 Dr. Rudolph Schmidt's book was translated by Drs. Vogel and Zinsser under the name of "Pain." Dr. Behan's treatise is quite the most elaborate that has yet appeared. For example, it contains a bibliography which covers sixty-two pages and there are over eight hundred pages of text exclusive of a complete index. Pain is almost universal as a symptom of disease. It is usually the first sign of impaired function. To alleviate it is the main business of the physician. Dr. Behan has explored the whole field of medicine, and nothing appears to have escaped his attention. He reasons acutely, and sheds a flood of light on many obscure conditions. It would be hard to imagine a more valuable book for a young practitioner. It will present disease to him in a new way.

OPHTHALMIC SURGERY. A TREATISE ON SURGICAL OPERATIONS PERTAINING TO THE EYE AND ITS APPENDAGES, WITH CHAPTERS ON PARA-OPERATIVE TECHNIC AND MANAGEMENT OF INSTRUMENTS. By CHARLES F. BEARD, M.D. Second edition, revised and enlarged with 9 plates., Price $5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

Comparing this edition with the previous one, it is noted that two new chapters have been added, one on "The Newer Operations on Glaucoma" and the other on "The Surgical Treatment of the Detachment of the Retina." Descriptions of other valuable surgical procedures are given, such as, Toti's and Butler's operations upon the lacrimal canal; Elschnig's and Motais' on tendons; Rogman's and Wicherkiewicz's for epicanthus; Angelucci's for ptosis; Verhoeff's and Green-Ewing's for entropian; Terson's for ectropian; Falchi's for central coloboma of the upper lid; Beu-

dinger's restoration of the lower lid. Indeed the latest teaching in ophthalmic surgery is here. The book contains about one-third more text than is to be found in the first edition, and the number of illustrations has been increased by eighty, yet the contents have been so condensed that the size of the book has not been materially increased. The book is beautifully printed, and considering the highly technical nature of the contents is remarkably free from error, but additional care with the index would not be misspent. For example, ligation of the canaliculus is to be found at page 136, and not 139 as stated. The book is one of high authority, and we can well imagine the pleasure an ophthalmic surgeon will have in it. Dr. Beard could quite profitably introduce in the next edition a section upon tumours of the eye-ball, and insist upon their removal at the earliest possible date. The illustrations are most effective, and many of them are beautiful in their clearness. By the publication of this book the credit of American surgery has been still further enhanced.

MEDICAL GYNECOLOGY. By S. WYLLIS BANDLER, M.D., adjunct professor of diseases of women, New York Post-Graduate Medical School and Hospital. Third thoroughly revised edition. Octavo of 790 pages, with 150 original illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, $5.00 net. Half morocco, $6.50 net. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

This book, as its name implies, was written as the result of a demand for a work which dealt with the non-operative side of gynæcology. Operative procedures were viewed only as a last resort in those numerous conditions where so much could be accomplished without them. The demand for a new edition of the work has become more urgent in view of the more general recognition in every department of medicine of the importance of the internal secretions. In the earlier edition Dr. Bandler contended for the importance of these secretions. Since that time their importance has been amply proved, especially in this country by Cushing, and abroad by Kermauner, Novak, and Biedel. In the present edition much has been added on the relations of the various glands producing internal secretion to pathological and normal states. It is not too much to hope that as a result of the vigorous presentation of the case in this work, a more thorough trial of purely medicinal measures will be made before operation is resorted to.

INTERNATIONAL CLINICS. A QUARTERLY OF ILLUSTRATED CLINICAL LECTURES AND ESPECIALLY PREPARED ORIGINAL ARTICLES. Edited by H. W. CATTELL, A.M., M.D., and others. Volume 1. Twenty-fourth Series, 1914. Philadelphia and London: J. B. Lippincott Company. Agent for Canada: Chas. Roberts, Montreal.

One is always sure to find something interesting in these Clinics. For twenty-five years they have appeared with unfailing regularity, and each number contains so varied a content that every reader will be satisfied. The quality of the writing is uniformly high.

A MANUAL OF *x*-RAY TECHNIC. By ARTHUR C. CHRISTIE. Illustrated. Philadelphia and London: J. B. Lippincott Company, 1913. Agent for Canada: Chas. Roberts, Montreal.

Designed especially for medical officers of the United States Army, who are obliged to familiarize themselves quickly with the technique of radiology, this book is limited to essentials. It will be found useful by a corresponding class in civil life, who find it expedient or necessary to do their own *x*-ray work. Wisely, we think, the number of reproductions of radiograms has been limited, as the ability to interpret them can only be gained by experience with the originals.

THE PRACTICE OF PEDIATRICS. By CHARLES GILMORE KERLEY, M.D., professor of diseases of children, New York Polyclinic Medical School and Hospital. Octavo of 878 pages, 139 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, $6.00 net; half morocco, $7.50 net. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

Dr. Kerley will be remembered as the author of an admirable work on "The Treatment of Diseases of Children." The present volume is an extension of the subject on an elaborate scale. It contains nearly nine hundred pages, and every paragraph is considered afresh. One would say that the note of the book is the minute attention given to treatment, not with drugs alone, but by all those methods which modern nursing has brought to the aid of the child. Dr. Kerley has had an enormous experience which he brings for the enrichment of every page of his book.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A Manual of Clinical Diagnosis by Means of Laboratory Methods for Students, Hospital Physicians and Practitioners. By Charles E. Simon, B.A., M.D. Eighth edition, enlarged and thoroughly revised; illustrated. Price, cloth, $5.00 net. Philadelphia and New York: Lea & Febiger, 1914.

Pharmacology: Clinical and Experimental. A Groundwork of Medical Treatment, being a Text-Book for Students and Physicians. By Dr. Hans H. Meyer, Vienna, and Dr. R. Gottlieb, Hamburg. Authorized translation into English by John Taylor Halsey, M.D Illustrated. Philadelphia and London: J. B. Lippincott Company, 1914. Agent for Canada: Chas. Roberts, Montreal.

Ophthalmic Surgery. A Treatise on Surgical Operations Pertaining to the Eye and its Appendages, with Chapters on Para-Operative Technic and Management of Instruments. By Charles H. Beard, M.D. Second edition, revised and enlarged, with 9 plates. Price $5.00 net. Philadelphia: P. Blakiston's Son & Company, 1914.

Tuberculosis. Its Cause, Cure and Prevention. By Edward O. Otis, M.D. Illustrated. Price, $1.25 net. New York: Thomas Y. Crowell Company, 1914.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by H. W. Cattell, A.M., M.D.; and others. Volume I. Twenty-fourth Series, 1914. Philadelphia and London: J. B. Lippincott Company. Agent for Canada: Chas. Roberts, Montreal.

THE PATHOGENESIS OF SALVARSAN FATALITIES. By DR. WILHELM WECHSELMANN, directing physician of the dermatological department of the Rudolf Virchow Hospital, Berlin. Authorized translation by CLARENCE MARTIN, M.D. St. Louis: The Fleming-Smith Company, 1913.

THE PRACTICE OF PEDIATRICS. By CHARLES GILMORE KERLEY, M.D. Illustrated. Price, cloth, $6.00 net; half morocco, $7.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

MEDICAL GYNECOLOGY. By S. WYLLIS BANDLER, M.D. Third revised edition. Illustrated. Price, cloth, $5.00 net; half morocco, $6.50 net. Philadelphia and London: W. B. Saunders Company, 1914. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

THE PRACTICE OF SURGERY. By RUSSELL HOWARD, M.S. (Lond.), F.R.C.S. (Eng.). With eight coloured plates and 523 illustrations in the text. Price 21s. London: Edward Arnold, 1914.

THE UNCONSCIOUS. THE FUNDAMENTALS OF HUMAN PERSONALITY NORMAL AND ABNORMAL. By MORTON PRINCE, M.D., LL.D. Price $2.00. New York: The Macmillan Company. Toronto: The Macmillan Company of Canada, Limited, 1914.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE, Volume VII, No. 4, February, 1914. Price 7s. 6d. net. London, New York, Calcutta, and Bombay: Longmans, Green, & Company.

MODERN ANÆSTHETICS. BY J. FREDERICK W. SILK, M.D. (Lond.). Price 3s. 6d. net. London: Edward Arnold, 1914.

CHRONIC COLITIS. ITS CAUSATION, DIAGNOSIS AND TREATMENT. By GEORGE HERSCHELL, M.D., (Lond.), and ADOLPHE ABRAHAMS, M.D., (Cantab.). Price 6s. net. London, New York, Bombay and Calcutta: Longmans, Green & Company, 1914.

Retrospect

ABSTRACTS OF GERMAN LITERATURE

SALVARSAN AND NEOSALVARSAN INJECTIONS. BY DR. E. SCHREIBER. *Muenchener Medizinische Wochenschrift*, No. 36, 1913.

THERE has been much discussion of late as to whether one may use salvarsan and neosalvarsan in concentrated solutions; and it cannot be denied that the decision is of great practical importance. It is obvious that the present somewhat complicated technique of salvarsan infusion is one that cannot be followed by every practitioner during office hours and one would gladly welcome a more simple method. During our first experiments with salvarsan we soon determined to try a concentrated solution so as to shorten the time of injection and simplify the technique, but our results and those of other clinicians made us resolve to give up the attempt, since we found that the stronger the solution the greater the toxicity. It is quite otherwise in the case of neosalvarsan. Our toxicological experiments convinced us that here the concentrated solutions were no more dangerous than the weaker ones. How is this difference between the two preparations to be explained? Ehrlich has always emphasized the fact that the toxicity of salvarsan depended upon the oxidation products, but neosalvarsan has more tendency to auto-oxidation than old salvarsan. Now if we dissolve some neosalvarsan with 10 ccm. in a closed vessel the auto-oxidation will naturally be less than if a greater amount of water were used, in which case the contact of the preparation with the oxygen of the air and the water, when the mixture is shaken about, is much more complete. Moreover, when we use neosalvarsan in concentrated solution we produce a solution which is nearly isotonic with the blood, which, in the case of salvarsan, can only be obtained by much weaker solutions.

During the last few months we have used neosalvarsan in concentrated solution only, and I can agree with Duhot, Ravaut, Strauss and others whose experience leads them to recommend neosalvarsan. We now dissolve ·75 g. in 10 ccm. of physiological salt solution and make the injection with an ordinary 10 ccm. syringe. I must warn you against using anything but sodium

chloride solution, for distilled water, by means of its haemolytic action, may give unfavourable results. It is also thought that with repeated injections the unpleasant symptoms produced are the result of a form of anaphylaxis. It is again possible that the oxygen of the blood combines with the neosalvarsan to form toxic products. Since we have made a practise of giving the injections every eight days with ·75 g. as the highest dose we have seen no exanthema and the gastric and intestinal symptoms have been very mild. One is indeed astonished how well the injections are tolerated. Great care must be exercised, on account of the concentration of the solution, to allow none to be injected under the skin. We stick the needle into the vein, and as soon as the blood flows from the needle, the syringe is attached and the fluid injected. It is my belief that neosalvarsan may be very strongly recommended for those in practice.

THE THERAPEUTIC USE OF CAMPHOR. BY H. LEO, of Bonn University. *Muenchener Medizinische Wochenschrift.* No. 43, 1913.

The author advocates the use of a saturated aqueous solution of camphor given intravenously. He has proved by animal experimentation that the drug not only acts more quickly when given in this manner, but that the effects are more lasting than with hypodermic injection. The stimulating action on the cortical centres and on the respiratory centre is quite remarkable, as is also the rise of blood pressure produced in an animal in which the heart has been artificially weakened by phosphorus. The favourable effect on pneumococic infections is of interest, for the drug seems to have a bactericidal effect on these organisms. It has certainly been proved that the serum of an animal that has been treated with camphor has an inhibitory action on the growth of pneumococci. Again, the expectorant action of camphor in bronchitis and bronchopneumonia, especially in children, has long been recognized; but it is a question if the favourable effect produced in these cases is not due to the stimulation of the respirations. Regarding the dosage, the author noticed that if 5 ccm. per kilogram of the animal's weight were given it produced spasm of the facial muscles; he would therefore recommend proportionately smaller doses for humans. He suggests an injection of 150-200 ccm. of the camphor solution for a person of average size, *i.e.*, of 60 kilograms in weight. As the saturated aqueous solution contains ·142 g. camphor per 100 ccm. this would mean a dose of ·21-·28 g. of the drug.

GONORRHŒA IN AN INFANT. BY FELIX REINHARD of Düsseldorf. *Muenchener Medizinische Wochenschrift*, No. 9, 1914.

Considering the rarity of gonorrhoea in new born male infants, in contrast to the comparative frequency of vulvo-vaginitis in new born girls, the infrequency of complications in the condition, and because of the fact that the child received the infection from a vagina in a stage of the disease so chronic that treatment had long been given up as unnecessary, the author publishes the following case. The child was born on November 9th. On November 21st the author was called and found marked œdema of the prepuce and from the urethra could be milked a considerable quantity of pus. The discharge became less, but on December 3rd the scrotum became red and swollen and finally broke down, discharging purulent material. On December 8th the left knee joint became red, swollen and fluctuating. The child had become weak and emaciated and died on December 9th. The author draws a moral regarding the necessity of silver nitrate instillation into the eyes of the new born as routine; for in the above case, thanks to this treatment, the eyes were unaffected.

VESICAL CALCULUS.

At a meeting of the German Urological Society in Berlin in September, 1913, as reported in the *Muenchener Medizinische Wochenschrift*, the question of treatment of vesical calculus was discussed. Federoff of St. Petersburg thought that the suprapubic operation and litholapaxy gave about the same small mortality—two to three per cent. He considers the latter the method of choice unless for some reason contraindicated. In the suprapubic operation it is best to close the bladder completely with catgut sutures and use a retention catheter in the after-treatment. Preindlsberg gave as his mortality statistics: 11 per cent. by the suprapubic route, 7 per cent. by the perineal route and 1 per cent. with litholapaxy. As to choice of the first two operations he prefers the modern perineal cystotomy with primary separation of the rectum. Zuckerkandl of Vienna thought that the advance of local anæsthesia had opened up great possibilities with regard to the crushing method. Israel of Berlin, in speaking of local anæsthesia, warned against the intra-vesical injection of alypin since a 3 per cent. solution has been known to cause death; he recommends a 1 per cent. solution of novocain. Goldsberg remarked on the comparative frequency of albuminuria in cases of vesical calculus.

London, Ontario. G. C. HALE.

1. On the Comparative Value of Certain Drugs in the Hypertension of Arteriosclerosis. By R. K. Rutkewitsch. *Zeitschrift fur Klinische Medizin*, Bd. 79.

Investigations were made on fifteen patients, and the following drugs were used: vasotonin in daily injections of 1 c.c. for ten days; nitroglycerine, 2 to 4 drops three times daily for seven days; of a one per cent. solution of nitroglycerine, or sodium nitrite, 0·2 gm. daily over the same period; guipsine, 6 pills daily for eight days; and the iodides (calcium or sodium) 1 gm. daily increasing to 2 gm. for ten days. Where possible the four drugs were administered to each patient. Korotkoff's method of estimating the systolic and diastolic pressures was adopted; the patient was always in the sitting position and the records were made each day at the same time. To counteract the effect of rest in bed, hospital diet, and the quietness of the medical wards, investigations were only commenced after the patient had remained one week in the hospital. The pulse rate, blood pressure, and the quantity of urine passed in the twenty-four hours were recorded each day, beginning one week before the administration of the drugs and continuing throughout the investigations.

The results were identical in each case and were as follows: The administration of vasotonin and guipsine had no appreciable effect on the pulse rate, blood pressure, or total quantity of urine. The nitrites produced a temporary lowering of the blood pressure, never of a longer duration than two or three hours. Sodium nitrite always gave rise to unpleasant subjective and objective symptoms; this was not seen when nitroglycerine was employed. When the iodides in doses of 2 gm. a day were given, there was a considerable lowering of the blood pressure. In most of the cases there was a corresponding improvement in the subjective symptoms; in the remaining cases, however, this was not noticed. With the discontinuance of the drug there was an immediate return of the blood pressure to its former level, with the accompanying subjective symptoms.

From the results obtained in these fifteen cases the investigator concludes that these drugs used by him are of little or no avail in the treatment of hypertension. He suggests that opo-

therapy, associating as it does hypertension with the internal secretory function of the glands, offers a good field for investigators.

In the meantime, we must content ourselves with the good results obtained from diet and physiotherapy.

2. Diabetes and Surgery. *Deutsche Medizinische Wochenschrift*, Jan. 1, 1914.

At a joint session of the Berliner Gesellschaft für Chirurgie and of the Verein für Innere Medizin und Kinderheilkunde in Berlin, there was a general discussion concerning the conditions under which one might operate on diabetics. Professor F. Kraus read a letter from Payr, of Leipzig, who in the last year had operated on twenty-three cases with diabetes. Of these the following were aseptic: hernias, hypertrophy of the prostate, mammary carcinoma, struma with tracheal stenosis, amputation, neuroma, and hypernephroma; the following were not aseptic: gastric and duodenal ulcer, carcinoma of the large bowel, vesical and renal calculi, and hæmorrhoids; the remaining were septic: empyema of the pleura, abscesses, glossitis and cellulitis. Of these twenty-three cases three died; they had been operated on for the following conditions: urinary infiltration in stricture of the urethra with false passages, strangulated hernia with gangrene of the bowel, and cholelithiasis.

Payr concludes from his own experience that surgical measures are contraindicated only when diabetes is accompanied by acetone, diacetic acid and beginning coma. (2) Aseptic wounds of diabetics heal as readily as those of others. (3) The severity of the disease depends not so much upon the actual amount of sugar present in the urine, as upon the possibility of diminishing its quantity, and upon the toleration of the individual for carbohydrates. (4) Before operation an attempt should be made to reduce the amount of sugar. (5) Surgical measures may be undertaken in the following conditions: wounds, diseases where death must otherwise follow, incarcerated hernia, appendicitis, etc., diseases which must eventually prove fatal, malignant tumours, diseases which may never prove fatal, but which, unless treated surgically, will cause considerable suffering, irreducible hernia, vesical and renal calculi, etc. (6) Cosmetic and plastic operations should be avoided when possible; (7) Chloroform should be avoided because of its injurious action on the liver and pancreas; ether also, though to a less extent, does harm to the large glands of the abdomen; local or spinal anæsthesia is to be preferred. (8) The graver the condition, the

less should be the thought given to the presence of sugar in the urine. (9) The prognosis should be reserved in all cases. (10) During convalescence care should be given to the diet.

Launyn, in a letter to Kraus, sums up his experience as follows: (1) The wound of a diabetic offers a greater danger in healing than that of another. (2) Every attempt should be made to reduce the sugar in the urine before operation. (3) Aseptic surgery is permitted even if glycosuria is great, if conditions are threatening. (4) Post-operative coma may occur after any operation, and after any anæsthetic. (5) Post-operative coma must be looked upon as an acid coma, hence every diabetic before operation should be given sodium bicarbonate.

Von Noorden says: (1) The danger lies in the greater susceptibility to infection. (2) There is a diminished resistance of the tissues, and a diminished tendency to healing of the wound, even though the wound be not infected. Avoidance of antisepsis favours wound healing. (3) Arteriosclerosis is usually present in diabetics over 40. This should be recognized when operating on extremities, and in the presence of gangrene. (4) Weakness of the heart muscle is present in the young diabetic as well as in the old; it may be dependent upon the vessels of the heart, but is usually a primary condition; prolonged narcosis favors this cardiac weakness. (5) The danger of narcosis is increased, if acidosis is present; this applies particularly to chloroform. (6) There is a tendency to after-bleeding.

Minkowski is of the opinion that the unfavourable healing of the wound depends upon: hyperglycæmia, abnormal metabolism, and a functional disturbance of the organs associated with the altered carbohydrate exchange. This is seen in a favouring of the development and conditions of growth of the infecting agent, in a diminished regenerative process, and in a diminished power of resistance. The unfavourable influences of surgical measures are: psychical shock, and the action of the operative trauma on the nervous system; injury to the organism from loss of blood; and injury to the respiratory and circulatory systems. As a result of the operation there may be an advance of the disease, acidosis may develop and lead to coma, there may be an increased loss of strength, and an increased heart weakness. The dangers of operation may be lessened by rigid asepsis, by the choice of an anæsthetic, by the speed of the operation, by the diet after the operation, and by giving large quantities of alkalies before the operation.

CANADIAN MEDICAL ASSOCIATION

ANNUAL MEETING, ST. JOHN, N.B., JULY 7TH TO 10TH

Preliminary Programme (April, 1914)

Address in Medicine: Thomas McCrae, M.D., professor of medicine, Jefferson Medical College, Philadelphia.

Address in Surgery: J. Rutherford Morison, F.R.C.S., professor of surgery, University of Durham, Newcastle-on-Tyne, England.

Address in Obstetrics: Henry Jellett, M.D., F.R.C.P.I., Master of the Rotunda Hospital, Dublin.

Section of Medicine

W. H. B. Aikens, Toronto: Radium.

H. B. Anderson, Toronto: (To be announced).

Percy Brown, Boston: Intestinal stasis and "chronic rheumatism"; a Roentgenologic consideration of the relation between them.

Max Einhorn, New York: Peptic ulcer.

F. G. Finley, Montreal: (To be announced).

W. F. Hamilton, Montreal: Paroxysmal tachycardia.

W. B. Kendall, Gravenhurst: Tuberculosis.

A. McPhedran, Toronto: Report of a case of aortic aneurysm with recurrent fever.

H. C. Parsons, Toronto: Tuberculosis in children.

A. Howard Pirie, Montreal: Lung abscess.

C. K. Russel, Montreal: Syphilis and "parasyphilis" of the nervous system and the results of treatment with salvarsan.

D. A. Shirres, Montreal: Psychic shock, and its varying effects.

H. A. McCallum, London: The relation of angina pectoris to infection.

J. A. MacGregor, London: (To be announced).

J. T. Fotheringham, Toronto: The use of carbolic acid in tetanus, with description of a case.

J. Kaufmann, Montreal: Clinical significance of a knowledge of the diastolic blood pressure, and the potential difference.

T. F. Cotton, Montreal: Cardiac hypertrophy.

Section of Surgery

G. E. Armstrong, Montreal: Linitis plastica.

G. W. Crile, Cleveland: (To be announced).

Harvey Cushing, Boston: Pituitary disorders.

J. M. Elder, Montreal: Some points in the treatment of fractures.

A. MacKenzie Forbes: Montreal: Sciatic pains, their cause and treatment.

A. E. Garrow, Montreal: Diagnosis and treatment of exophthalmic goitre, with a short report of cases.

J. H. Halpenny, Winnipeg: Tuberculosis of the spleen.

F. W. Nagle, Montreal: The selection of anæsthetics, sequences and methods.

I. Olmsted, Hamilton: (To be announced).

A. Primrose, Toronto: Hour-glass contraction of the stomach.

C. L. Starr, Toronto: Congenital dislocation of the hip.

F. N. G. Starr, Toronto: Splenectomy: indications for operation; the operation and its after-effects.

John Stewart, Halifax: Choloroform anæsthesia.

W. G. Anglin, Kingston: Subtrochanteric fractures of the femur.

W. G. Turner, Montreal: The use of the bone graft in surgery.

Wm. Hutchinson, Montreal: Renal and ureteral calculi, with a new method of removing the latter.

SURGICAL CLINIC AT THE GENERAL PUBLIC HOSPITAL: G. E. Armstrong, Montreal.

X-ray Section

Percy Brown, Boston: An improved method of Roentgen technique as applied to the head, with special reference to the nasal accessory sinuses and the perisellar neighbourhood.

J. T. Case, Battle Creek Sanatorium: Gastric carcinoma.

L. G. Cole, New York: Diagnosis of gastric and duodenal ulcers, and gall-bladder infection, with or without calculi.

G. G. Corbet, St. John: Articulations.

J. L. Duval, St. John: Fractures.

W. H. Eagar, Halifax: Bone lesions (with lantern demonstration).

S. W. Ellsworth, Boston: Résumé of the evening clinic for diagnosis of the diseases of the chest.

A. W. George, Boston: (To be announced).

G. McNeill, London: (To be announced).

A. Howard Pirie, Montreal: The rugæ of the mucous membrane of the stomach in various diseases of that organ as shown by *x*-rays.

W. L. Watt, Winnipeg: The chest.

R. Wilson, Montreal: Radiography of the accessory sinuses.

Combined Sections

DISCUSSION ON "INTESTINAL STASIS"

Medical: C. F. Martin, Montreal; Max Einhorn, Boston; A. McPhedran, Toronto, and others.

Surgical: A. Primrose, Toronto; J. M. Elder, Montreal; F. N. G. Starr, Toronto; R. E. McKechnie, Vancouver, and others.

Anatomical: A. C. Geddes, Montreal.

X-ray: J. T. Case, Battle Creek, Mich.; L. G. Cole, New York, and others.

Section of Obstetrics and Gynæcology

G. S. Cameron, Peterborough: Puerperal infections.

J. R. Goodall, Montreal: The treatment of puerperal infections.

F. A. L. Lockhart, Montreal: Pelvic inflammation.

B. P. Watson, Toronto: (To be announced).

James Torbert, Boston: (To be announced).

Section of Ophthalmology and Oto-Laryngology

Eugene Crockett, Boston: Ear deafness and treatment by 606.

G. K. Mathewson, Montreal: A primary syphilitic lesion on the conjunctiva.

S. H. McKee, Montreal: Interstitial keratitis.

J. W. Stirling, Montreal: (To be announced).

J. A. MacMillan, Montreal: Treatment of squint.

H. S. Muckleston, Montreal: A case of pharyngitis in association with erysipelas.

D. H. Ballon, Montreal: Recent investigations on the semicircular canals and their clinical applications.

Section of Public Health

PUBLIC LECTURE: C. A. Hodgetts, medical adviser, Commission of Conservation, Ottawa: Health problems in Canada.

REPORTS OF COMMITTEES:

Medical Inspection of Schools: Chairman, J. H. Halpenny, Winnipeg.

Applied Sociology: Chairman, P. H. Bryce, Ottawa.

Mental Hygiene: Chairman, Helen MacMurchy, Toronto.
Venereal Diseases: Chairman, J. G. Adami, Montreal.

CHAIRMAN'S ADDRESS: H. W. Hill, London.

G. C. Jones, Ottawa: The importance of the recent Balkan war to the Canadian medical practitioner.

Lorne Drum, Ottawa: Militia sanitation and its influence on the public health of the country.

C. J. Hastings, Toronto: Industrial diseases and industrial hygiene.

P. H. Bryce, Ottawa: The methods of conservation of food products in relation to public health.

A. P. Reid, Nova Scotia: The housing problem: a business proposition.

J. D. Pagé, Quebec: The immigrant, the profession, and the nation.

J. W. S. McCullough, Toronto: Public health in Ontario.

T. A. Starkey, Montreal: (To be announced).

J. A. Grant, Halifax: The medical profession and the militia service.

C. T. Graham-Rogers, New York: (To be announced).
A. F. Miller, Kentville, N.S. (To be announced).
M. M. Seymour, Regina (To be announced).

Laboratory Section

D. Fraser Harris, Halifax: The rhythm of voluntary muscular contraction and its relation to the tremor of tonus.

E. K. Maclellan, Halifax: The biological and other blood tests in the law courts.

J. Kaufmann, Montreal: (1) Wohlard's method of demonstrating the relative sizes of the cavities of the heart in dry specimens; (2) Injection of the subendocardial bursal spaces to demonstrate the auriculo-ventricular bundle.

J. Kaufmann and E. L. Judah, Montreal: A rapid colour method for the differentiation of fat in gross specimens.

J. J. Ower, Montreal: (1) Complement fixation in gonorrhea; (2) Early aneurysm of the aorta.

L. J. Rhea and E. H. Falconer, Montreal: A bacteriological study of the lymph nodes removed from a case of Hodgkin's disease.

L. J. Rhea, Montreal: (1) The comparative pathology of the tracheal lesions in whooping cough and canine distemper; (2) The comparative pathology of anterior poliomyelitis and "blind staggers" in the horse.

S. H. McKee, Montreal: Demonstration with specimens, (1) Amaurotic family idiocy; (2) Retinitis pigmentosa; (3) A comparative study of the bacillus bronchi septicus and the Bordet-Gengou bacillus of whooping cough.

RAILWAY RATES

Reduced fares for the meeting have been arranged as follows: From Montreal by the Canadian Pacific and the Intercolonial railways, and from all points on the latter railway, the rate will be a single fare for the return journey; from all other parts of the country, and by all lines, the rate will be a fare and one-third. These rates are available for physicians attending the meeting and for members of their families accompanying them. To take advantage of the reduced rates a physician when starting on the journey must obtain from the ticket agent a standard convention certificate properly filled in and signed by the latter. These certificates will be endorsed at St. John, first, by the secretary of the Association, and secondly, by a special agent who will be in attendance at the meeting on July 8th and 9th for this purpose. He will collect 25c in respect of each certificate which will then entitle the holder to a return ticket to his starting point, either without further charge, or at the rate of one-third fare, as the case may be. From Fort William, Ontario, and all points east, tickets for the going journey must be purchased between the dates July 3rd and 9th, both inclusive, and properly validated certificates will be honoured at St. John until July 14th, for continuous passage tickets through to the original starting point by the direct route. From points west of Fort William, in Ontario, Manitoba, Saskatchewan, and Alberta, these dates will be June 29th to July 3rd, and July 25th, respectively; and from points in British Columbia the dates will be June 25th to 30th, and July 25th, respectively.

The Canadian Association for the Prevention of Tuberculosis meets in Halifax on July 13th and 14th, the Monday and Tuesday following the St. John meeting. Those who wish to attend both meetings and take advantage of the reduced rates, must purchase a single fare ticket from their starting point to ***Halifax***, obtaining from the ticket agent a standard certificate as above, and also stop-over privileges at St. John, or a free side trip from Moncton to St. John and return, according to the route travelled. Certificates in this case will be honoured at Halifax for the return journey to points east of Fort William until July 18th.

Further particulars will be published in the June issue of the JOURNAL.

Obituary

Dr. H. J. Sullivan, of Chatham, Ontario, died of pneumonia March 18th. Dr. Sullivan, who was thirty-nine years of age, was born in Picton, Ontario, and was a graduate of Toronto University. He had practised in Chatham for eight years. He leaves a widow and two children, aged four and five years respectively.

Dr. Charles B. Lake, of Ridgetown, Ontario, died March 18th. Dr. Lake was born in the county of Frontenac, November 5th, 1842. He graduated from Queen's University in 1866 and first went into practice at Thamesville. In 1867 he removed to Ridgetown. He is survived by his widow and three sons.

Dr. A. L. McLaren, of Point Edward, Ontario, died March 18th, in the sixty-seventh year of his age. Dr. McLaren was reeve of the village of Point Edward and was a well-known physician throughout the county of Lambton. He was born at Campbellville and graduated from the University of Toronto. He practised for a short time at Port Huron, and for the past twelve years had been in practise at Point Edward. He is survived by his widow and an adopted daughter.

Dr. Alexander Sangster, of Stouffville, Ontario, died March 23rd, in the fifty-sixth year of his age. Dr. Sangster graduated from Victoria University in 1884 and at once went into practice at Stouffville. He leaves one son, Dr. F. N. Sangster, of Sarnia.

Dr. A. J. Sinclair died at Paris, Ontario, March 22nd. Dr. Sinclair was a well-known practitioner in western Ontario. He was born near St. Thomas and was educated at the Grammar School there. He was Grand Trunk surgeon at Paris for twenty-five years and for some time was medical attendant of the Ontario School for Indians at Brantford.

Dr. G. L. Laforest, of Montreal, died March 26th. Dr.

Laforest was born in Quebec in 1857. He was educated at Fredericton, New Brunswick, and at Victoria, British Columbia, and for the past thirty-five years had resided in Montreal. He leaves a widow, two sons, and one daughter.

DR. HUGH WATT died at Elko, British Columbia, March 23rd. Dr. Watt had been in charge of an Indian Reservation at Fort Steele.

DR. W. C. COUSENS, of Ottawa, died on Sunday, April 12th, at the age of fifty-nine. Dr. Cousens graduated from McGill University in 1882 and afterwards studied at Edinburgh and London. He built up a large practice in Ottawa, where he soon became a prominent member of the profession. He was greatly interested in St. Luke's Hospital and last year became chief physician there. Apart from his professional work, Dr. Cousens was a sportsman, a musician, and a literary man of no mean ability. He was a man of great benevolence and his death is much regretted. He leaves a widow, three sons, and two daughters.

News

MEDICAL COLLEGES

THE Faculty of Medicine of McGill University will give this year, as usual, instruction to post graduate students. The work offered will be almost entirely clinical, the chiefs in medicine, surgery, and the specialties in the Royal Victoria, Montreal General, and Maternity Hospitals taking part. The course will begin on Monday, June 1st, and will continue for two weeks.

THE Dental Department is also offering a post graduate course

this year and has already received applications for the work which will be continued for one week beginning May 11th.

THE undergraduate session is now over, all lectures and practical work having ceased on April 30th. The examinations will begin on Monday, May 4th, and, it is expected, will be completed about the 25th. In the graduating class this year there are seventy-five students.

ONE of the interesting events of the session just closing was the visit of Dr. T. G. Brodie, professor of physiology, Toronto University, who during the week of March 23rd lectured here to the classes in physiology. Dr. Brodie's visit was very much appreciated and his lectures enjoyed by all who heard him.

IT is expected that examiners from Toronto University will take part in the examinations at McGill, while those from McGill will go to Toronto; this will be done this year only in anatomy and pathology, but it is hoped that later this interchange of examiners will be extended to many other subjects.

THE Department of Hygiene of the University of Toronto has undertaken to prepare and distribute various biological products. These include diphtheria antitoxin, tetanus antitoxin, anti-meningitis serum, and rabies vaccine for the Pasteur treatment. The prices of these products are to be only slightly above actual cost. The department has already entered into arrangements with the Provincial Board of Health of Ontario for the distribution of diphtheria antitoxin and rabies vaccine. The proceeds of the sale of these substances, after paying the cost of maintenance, will go toward aiding research in Preventive Medicine and Hygiene, Under the plan as it is arranged in Ontario all these biological products will be available at exceedingly low prices, and it is hoped that these prices can be reduced still further at a later date. The work will be under the direction of the members of the Department of Hygiene.

ONTARIO

THE annual convention of the associated boards of health of Canada will be held this year at Port Arthur and Fort William. The date has not yet been decided upon.

THE Toronto board of health has decided to hold a competition for plans of workmen's cottages. The competition is open to every one and the plans must be submitted before June 1st, next. It is suggested that the cottages, detached and semi-detached should be built by the city and should be rented to workmen.

THE Empire wing of the Kingston General Hospital was formally opened April 2nd. It has been built at a cost of $60,000.

A SANATORIUM is being built at Freeport by the Berlin Tuberculosis Sanatorium Association. It is almost completed and it is expected that it will be ready for the accommodation of patients in about two months' time.

AN addition is to be made to the St. Joseph's Hospital at London. The plans call for an expenditure of about $50,000.

ARRANGEMENTS have been made whereby the provincial board of health will supply diphtheria antitoxin to the local boards of health at reduced rates. The serum will be sold at 25 cents for 1000 units, 50 cents for 2000 units, $1.25 for 5,000 units, and $2.50 for 10,000 units. Syringe packages of these units will be ten cents extra in each case. Supplies will be sent to druggists and dealers at the same prices and to these prices they will be allowed to add 25 per cent. commission; they will also be allowed to return the antitoxin within twelve months. Druggists may obtain their supplies from the Department of Hygiene of the University of Toronto. Practitioners may obtain supplies from the local board of health, a local druggist, or from Messrs. Ingram & Bell, Limited, 256 McCaul Street, Toronto, or The J. F. Hartz Company, Limited, 456 Yonge Street, Toronto. Accounts to boards of health will be rendered at the end of each month, and will be collected from druggists by bank draft, terms net.

THE sum of $125,000 is to be expended upon improvements to the Hamilton Hospital. A new laundry and a boiler house have already been built.

A convocation hall is to be added to the Woodstock Hospital for Epileptics. A workshop and a laundry will also be built. A grant of $10,000 has been made for this purpose by the provincial government.

ACCORDING to the report just issued by Dr. Bruce Smith, there are in the province 89 public hospitals, 57 private hospitals, 37 refuges, 8 sanatoria for consumptives, 33 orphanages, 3 homes for incurables, and 31 county houses of refuge. During the year ending September 30th, 68,738 patients received hospital treatment, and 4,058 deaths and 4,210 births occured. The amount expended on hospitals during the year was $3,155,340, of which $232,276 was granted by the provincial government.

MARITIME PROVINCES

THE Dominion government has appointed Dr. F. R. Gow to the post of chief medical officer and inspector for immigration at Halifax.

IT is hoped that the St. John Infirmary, which is being built at St. John, New Brunswick, by the Sisters of Charity, will be ready for occupancy by the beginning of next June. The hospital is situated on Coburg Street and consists of an old residence which has been remodelled and a new building which has cost about $100,000. The hospital has accommodation for about sixty patients and is intended to be non-sectarian.

THE Hazlewood Hospital for cases of tuberculosis, which was opened January 6th, at Halifax, can accommodate twelve patients. The beds have all been occupied ever since the sanatorium was opened and fifteen patients have already been treated. Three deaths have occurred but in each case the patients were in a very critical condition when admitted to the hospital.

THE new hospital for the Dominion Iron and Steel Company at Sydney, Nova Scotia, was opened March 19th. It will be remembered that the old hospital was burnt down some months ago.

CERTAIN amendments have been made to the New Brunswick Medical Act. The fee for matriculation is to be increased from $5 to $10; that for examination in medicine has been increased from $10 to $30, and that for registration from $10 to $40. Registered physicians are required to pay an annual fee of $1; should they prefer to do so, instead of making this annual payment, they may now make a single payment of $20.

QUEBEC

THE Fothergill gold medal of the Medical Society of London for 1914 has been awarded to Dr. John George Adami, professor of pathology at McGill University, for his work on pathology and its application to practical medicine and surgery.

THE outbreak of typhoid along the Richelieu River has abated and precautions have been taken to prevent a recurrence of the epidemic. The water supply at St. Johns, Iberville, Chambly, and Chambly Basin is being treated with hydrochloride and a water purifying plant is to be installed at Sorel.

THE plans are in course of preparation for a wing which is to be added to the Royal Victoria Hospital at Montreal. It will be called the Ross Memorial Pavilion and will be placed behind the present buildings of the hospital. A small portion of the cost has been subscribed, but the greater part of the expense will be borne by Mr. J. K. L. Ross as a tribute to the memory of his father, the late Mr. James Ross. The new wing will provide accommodation for 150 private patients and will increase the total accommodation of the hospital to 475 beds.

ALTHOUGH the Montreal General Hospital has just been enlarged and its accommodation increased from 260 to 324 beds, it is impossible to admit many urgent cases on account of the lack of space. It is stated that, on an average, ten patients have been refused admission each day during the past winter.

MANITOBA

THE communicable diseases reported in Winnipeg during the past year are as follows: typhoid, 232 cases, 18 deaths; smallpox, 44 cases, 1 death; chicken-pox, 173 cases; measles, 361 cases, 15 deaths; scarlet fever, 1,288 cases, 45 deaths; whooping cough, 57 cases, 19 deaths; mumps, 44 cases; diphtheria, 281 cases, 34 deaths; erysipelas, 95 cases, 19 deaths; tuberculosis, 213 cases, 132 deaths.

THE plans have been prepared for an extension to the Brandon Hospital, but as they necessitate too great an expenditure the architects have been requested to prepare other plans. It is proposed to expend $100,000 and to build a maternity home and

extend the mission building and the nurse's home. The hospital at present contains 100 beds.

ALBERTA

At the provincial convention of local improvement districts and rural municipalities, which took place in March, President Greenfield proposed that a resolution should be passed to suggest a better system of medical service for the rural communities. He referred to the practice in South Africa of subsidizing practitioners and nurses to live in remote districts and suggested that something of the sort might be done in Alberta, where it is frequently impossible for farmers, who live in out of the way places, to obtain medical assistance at a reasonable cost.

Last year the sum of $30,000 was voted by the ratepayers of Calgary towards a sanatorium for the treatment of cases of tuberculosis. It has now been decided to proceed at once with the building and steps are being taken to secure a suitable site.

It was decided at a meeting of the Calgary city council, held March 24th, that the medical inspection of the children in the public schools should be in charge of Dr. Mahood, the medical officer of health.

A grant of $19,000 has been made by the city council to the Medicine Hat General Hospital. $5,000 is to be devoted to current expenses and $14,000 is to pay for some property purchased for the hospital. A by-law for the latter amount will be prepared and submitted to the ratepayers.

BRITISH COLUMBIA

A grant of $2,000 has been made by the provincial government towards the construction of a hospital at Masset. The plans have been prepared for a building consisting of eight or nine rooms. It is hoped also to enlarge the hospital already existing at Masset for the use of the Indians and an application for financial assistance in this undertaking has been made to the provincial government.

A grant of $225,000 was made recently to the Vancouver General Hospital by the provincial government. Of this amount

$90,000 is to be expended on a building which at first will be used by McGill College until the college buildings now in course of construction are completed. The building will then become part of the hospital. The plans have also been prepared for certain alterations and improvements to be effected in the hospital itself, on which it is proposed to spend a further $90,000.

THE Vancouver General Hospital has been granted the sum of $100,000 by the provincial government. Next year this amount will be increased to $125,000.

THE municipal grant to the Prince Rupert Hospital has been reduced from $10,000 to $7,000. It is possible, however, that the amount will be increased later on.

THE following are the members of the Council of the British Columbia College of Physicians and Surgeons: Dr. P. A. McLennan and Dr. A. P. Proctor, Vancouver; Dr. O. M. Jones and Dr. H. M. Robertson, Victoria and Vancouver Island; Dr. J. S. Birris, of Kamloops, Upper Kootenays; Dr. S. Bonnell, Lower Kootenays; and Dr. R. E. Walker, New Westminster.

A health congress and exhibition is to be held under the auspices of the Victoria Medical Society in connexion with the Dominion Exhibition.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Dominion Medical Monthly, April, 1914:

The modern treatment of gastric disease . H. J. Patterson.

The Canadian Journal of Medicine and Surgery, April, 1914:

Some reminiscences of the International Congress of Medicine, London . . Fraser Harris.
Ethical problems underlying the social evil . . . . . P. H. Bryce.

Western Canada Medical Journal, March, 1914:

Vaccines and surgery	D. R. Williams.
Dirty hands	R. G. Eccles.
A note of warning against dishonest practices in the medical profession	H. R. Shands.

The Western Medical News, March, 1914:

An interesting case of gall-stones	J. Jordan Field.
Bovine tuberculosis and its relation to public health	M. P. Ravenel.
Nitrous oxide-oxygen anæsthesia	J. W. Turnbull.
Picric acid as a routine test for albumin	———

L'Union Médicale du Canada, March, 1914:

Cataracte diabétique	A. Plouffe.

L'Union Médicale du Canada, April, 1914:

Cours de pédiatrie—Leçon d'ouverture	R. Masson.
L'hygiène dans l'education	E. LeSage.
La chirurgie à la campagne	O. E. Desjardins and J. H. Raymond.

University of Toronto Medical Bulletin, April, 1914:

A case of traumatic amnesia	G. F. Boyer.
The result of treatment of syphilis as shown by the Wassermann reaction	Gordon Bates and G. S. Strathy
The systematic diagnosis of progressive atrophy of muscles with the report of an unusual case of dessimated sclerosis	G. W. Howland.
Report of a case of specific cerebrospinal meningitis successfully treated by intra-spinal injections of antimeningococcic serum	W. B. Thistle.
Notes of a case of acute primary pyelitis, with remarks upon acute bacterial invasion of the kidneys	J. T. Fotheringham.
The diuretic action of theobromine and of theophylline	R. D. Rudolf.

Nervous hypochylia with recovery—cardiac arryhthmia due to the administration of digitalis . . . G. Chambers.
Reflex irregular contraction of the stomach simulating hour-glass contraction—rupture of duodenum with complete duodenal fistula—recovery . . G. Bingham.
Tendon fixation, a new operation for the prevention of paralytic deformities . W. G. Gallie.
Fracture of the wrist: analysis of the *x*-ray plates of a series of ninety-four cases . . . . . E. Stanley Ryerson.
A case of hæmatocolpos, with reference to the theories of causation and the arsenic content of the fluid . . A. C. Hendrick and H. S. Raper.
Cæsarean section repeated on the same patient . . . . . .K. C. McIlwraith.
A case of abscess of the temporo-sphenoidal lobe following acute otitis media . . . . . G. Royce.
Upon the reliability of the ordinary signs of acute cystitis . . . . . G. Ewart Wilson.
Report of a case of fracture of the pelvis, with rupture of the urethra E. Stanley Ryerson.

The Canadian Practitioner and Review, April, 1914:

The therapeutics of radium . . . R. Abbe.
Typhoid inoculation . . . . . W. B. Leishman.
A case of primary focal hæmatomyelia, with a remarkably rapid recovery . G. E. Wilson.

The Public Health Journal, April, 1914:

Waste humanity . . . . . E. R. Johnstone.
We pay . . . . . Lucy W. Brooking.
The Nova Scotia League for the Care and Protection of the Feebleminded Mrs. Stead.
Mental defectives in Alberta . . . R. B. Chadwick.
Mentally defective pupils in the public schools of Toronto . . . . R. H. Cowley.
Feebleminded women in houses of refuge . J. McNeillie.

An old text . . . . . Mrs. Shortt.
The problems of the feebleminded . . Mrs. Cummings.
Feeblemindedness—a municipal problem D. M. Cameron.
The feebleminded and social evils . . G. S. Strathy.
Municipality responsibility . . Controller McCarthy.
The feebleminded and crime . . . J. E. Farewell.
Rural cold storages, a scientific and economic necessity . . . . P. H. Bryce.

Medical Societies

AMERICAN ASSOCIATION OF PATHOLOGISTS

THE fourteenth annual meeting of the American Association of Pathologists and Bacteriologists was held in Toronto on April 10th and 11th. Prof. J. J. MacKenzie, of Toronto, president of the Association, occupied the chair. The meetings were held in the new Toronto General Hospital, where the association was entertained at luncheon by the authorities of the University of Toronto and of the General Hospital. About one hundred members of the society were in attendance, as well as twenty or more guests. From a scientific standpoint the papers read were of a high order. One marked feature of the programme, and one which indicates the tendency of pathological research, was the preponderance of experimental and bio-chemical topics discussed. Of sixty-six papers all but six or eight dealt with subjects treated from the standpoint of pathologic physiology.

The American Section of the International Association of Medical Museums met on the day preceding the meeting of the Pathologists. The president, Prof. R. M. Pearce, of Philadelphia, was in the chair. About fifty members were in attendance, and an interesting programme was carried out along the lines of museum research work and methods of teaching and technique. Among those contributing were Drs. W. M. L. Copeland, Howard Kersner, J. H. Hewitt, S. J. Peirce, R. P. Strong, H. Gaylord, R. H. Malone, J. G. Fitzgerald, and Oskar Klotz. A good collection of exhibits illustrating the papers presented, both at this meeting and at the meeting of the Patholgists, was shown. A gift of $5,000 from the late Lord Strathcona to the International Association was announced. The secretary, Dr. Abbott, reported on the very successful meeting in conjunction with the Congress of Medicine in

London last year, and read the address of the international president, Prof. Aschoff, of Freiburg, recommending a propaganda for increased membership throughout the world and the organization of the national sections in closer connexion with the pathological and anatomical societies.

The American Society for Cancer Research also met on April 9th at the Toronto General Hospital. There was a good attendance and an important programme was presented.

TORONTO ACADEMY OF MEDICINE

THE monthly general meeting of the Toronto Academy of Medicine was held on Tuesday, January 6th. On this occasion Colonel G. Carleton Jones, the director-general of the Canadian Medical Services, delivered an address on the relation of the medical profession to the defence of the country. Colonel Jones quoted the words of Sir Ian Hamilton, "In Canada the medical corps keeps well ahead of every other branch of the services in completeness of preparation for war, a state of affairs due largely to the whole-hearted support it receives from the medical profession in all its grades. A militia is, or ought to be, an expression for purposes of war of every form of national activity." He referred to the fact that the Canadian army is a national army by virtue of the Militia Act, which states that all male inhabitants of Canada, with certain exemptions, are liable for military service in case of war, and laid great stress upon the importance of being prepared for war. Colonel Jones reminded his hearers that in 1899 there was no organized medical service in the Canadian militia and that, although great progress had been made since then and although there are now seven hundred medical officers and nineteen hundred non-commissioned officers and men in the service, should war occur it would be impossible to meet the demand. The medical requirements would be all the greater since the troops would be undisciplined and untrained. Moreover, in Canada, the larger centres are near the border and on the sea coast, and therefore arrangements for the care of the sick and wounded would have to be made at smaller places and every community would have to supply some assistance. Thus, the matter is one that should interest each individual and this interest it is the duty of the physician to encourage. What medical society in Canada, he asked, has carefully considered the question of a Canadian war? What medical faculty has taken steps to inculcate the duties I have mentioned in the minds of its medical

students? What hospital staff has thought out or even given a passing thought to what their duties would be in war time, and how their present duties and capacities fitted them for the greatest task that would ever be placed upon them?

In opening the discussion, Lieutenant-Colonel G. C. Foster pointed out that, among other things, much assistance could be given by medical men in aiding the work of the St. John's Ambulance Association or the Canadian Branch of the Red Cross Society. He referred to the shortness of the period of training and hoped that after the meeting many applicants would be forthcoming for the posts of officers in the Canadian Militia.

Dr. Fotheringham detailed the duties of the medical corps and brought to the notice of the Fellows the special reasons which make it necessary that an efficient army should have a well-organized and efficient medical service.

Dr. D. W. McPherson did not think that medical men had done their duty in assisting the medical services of the militia. He considered that a change of duty from that of ordinary practice to medical work in the militia was beneficial and he advised men to join if merely for the training they would receive.

The importance of such training was emphasized by Dr. G. Stirling Ryerson, who referred to the difficulties experienced by the ordinary medical man if transferred to the army without preparation, owing to his lack of knowledge of army regulations and discipline. In his opinion, it would be impossible for any country to maintain a medical service in time of peace that would be sufficiently strong in time of war, as the consequent taxation would be too great a burden upon the people. He recalled past experiences and insisted on the necessity of being prepared for war.

Dr. C. R. Dickson, secretary of the Canadian Red Cross Society, gave an interesting account of the work of the society. He stated that there were three thousand persons in Canada who were members of the society and who were ready for action at any moment.

The discussion was continued by Dr. N. A. Powell, Dr. Albert Macdonald, and Dr. Duncan Anderson. Dr. Macgillivray moved a vote of thanks to Colonel Jones and to Colonel Foster for their visit to the Academy; this was seconded by Dr. Marlow. Colonel Jones replied shortly to the discussion and thanked the President and Fellows of the Academy for the vote of thanks they had accorded him.

At a recent meeting of the Pædiatric Section of the Toronto Academy of Medicine, the discussion centred on Dr. W. H. Pepler's report in December, 1913, of a case of intussusception and on his remarks in reference to the early diagnosis of such a condition.

Dr. W. E. Gallie, discussing Dr. Pepler's paper said, that from a surgical standpoint there were two or three points of great interest in this case. There was the fact that the child was under one year of age. At this early age the operation of laparotomy was a serious one and showed an extremely high mortality. One would therefore hesitate to operate unless the symptoms pointed definitely to urgent need of surgical interference. Dr. Gallie had operated on Dr. Pepler's case after it was sent to the Children's Hospital, and although there was no tumour, that could be made out by physical diagnosis, present in the abdomen, he found on operation an intussusception nine inches long and two inches thick. One could hardly believe a tumour of this size could be present and yet not be palpable, and although he had examined and palpated the abdomen two or three times in succession to discover internal enlargement he found none. Even after anæsthetizing the patient, on examination no tumour was found. On opening the abdomen, he found the enlargement tucked up under the liver and lying at the back of the abdominal cavity. One sign of great importance to the surgeon when these cases are presented for operation is the character of the blood in the stools. From the usual statements found in the text-books one would expect to find a stool showing mucus streaked with blood, but the condition is a mucus stool tinted with blood. It is this pinkish tinge that is so characteristic of intussusception. Dr. Gallie was not sure that this child's life could have been saved if it had been operated on earlier, but there is no doubt, if one is going to save life by surgical interference in these cases, a very early operation is necessary. He had looked up the Children's Hospital reports of operation on intussusception cases during the last ten years, and had found that the cases operated upon during the first twenty-four hours showed that intussusception could then frequently be reduced. From these reports, and in his own experience with small infants, it was found that those cases where the intussusception was reduced only with great difficulty and where resection of the intestine was required, were attended with a very high mortality. Referring to the case under discussion, Dr. Gallie said he was unable to reduce the tumour completely. He had reduced it from nine inches to the size of the specimen shown at the meeting, a tumour of two or three inches in length. Dr.

Gallie said that he had learned a great deal from this case and would face another such condition with less hesitation with regard to operation. If such a case came into the hospital now, he would not wait twelve hours doubting the possibility of intussusception because of the absence of abdominal tumour.

Dr. Harold Parsons, chairman of the Section, said there were several very important points to be considered in connexion with these cases, and he hoped these points would be fully discussed. There was the question of the tumour and the question of the difficulty of diagnosis, although in regard to treatment there was no difficulty. Dr. Parsons said it was very difficult in private practice to get the consent of the parents to operate on a child five or six months of age.

Dr. MacDonald agreed with Dr. Parsons that it was very difficult in private work to get the parents' consent to these operations on children under two years of age. In the two cases he had of this sort, the stools were not blood-stained, they were merely tinged a little with blood. In one of these cases the tumour could be readily made out by palpation.

Dr. John L. Bray agreed that the important point in these cases was to make a diagnosis early. If one had the clinical picture of a case of intussusception in mind, it was fairly easy to make an early diagnosis. The most important feature in these cases was straining at stool, also the character of the stool. The only disease to differentiate the condition from is dysentery, and intussusception differs so from dysentery that it is not difficult to decide which of these conditions one is dealing with. In dysentery the motions are very foul, whereas in intussusception usually they are not so. In intussusception the difficulty is merely a mechanical one and the discharge is due to obstruction in the bowels. The blood in the stools is a result merely of capillary oozing. The disease resembles dysentery in that in both diseases the child strains at stool, but if one examines the stool a diagnosis is easy. The treatment is surgical and there is no use wasting time trying any other treatment. Dr. Bray had seen a little girl, five or six years of age, sitting on a chamber in her room. She was very ill, but did not look like a child sick with dysentery. Several consultants saw this case, but failed to diagnose it. As the child was vomiting, it was thought her trouble was of brain origin instead of an abdominal condition. The child's abdomen was opened and the cause of her illness was found to be worms, one of which had eaten through the bowel.

Dr. Bray reported another case, that of an infant a little over two months old. This child, a breast-fed infant, had persistent vomiting and free stools with considerable straining. The discharges were made up principally of brown mucus, but no blood. The child was examined and there was no indication of intussusception and no tumour to be felt either by palpation of the abdomen or by examination per rectum. As the vomiting and stools continued, a surgeon was consulted. He was of the opinion that there was a tumour in the right iliac fossa. The abdomen was then opened and a search made for the tumour, but no tumour was found. After searching for some time it was discovered that the pyloric orifice of the stomach was almost cartilaginous. It was very, very rigid. Gastro-enterostomy was done and the child made a very good recovery, but died later from some other disease.

One speaker referred to the fact that the case of intussusception under discussion by Dr. Pepler was one of intussusception into the colon as was the case referred to by Dr. Bray. When there is intussusception higher up there is no straining at stool. He believed that it was the cases of intussusception high up that were difficult to diagnose. Another point to take into consideration is the fact that intussusception comes on sometimes as a result of diarrhœa with a severe colitis of a membraneous type. There is often a markedly swollen colon which feels like a sausage, but here there would be no mass to be felt per rectum. He said intussusception was an acute disease and reported the following case:

A child took sick at ten o'clock one morning. It had the appearance of shock such as one would expect in perforation. Some time after the straining at stool commenced the symptom of vomiting was added. There was nothing in the rectum, and there was no abdominal tumour. The patient was removed to the hospital at twelve o'clock at night and fourteen hours afterwards was operated on; the small bowel had passed from the cæcum into the colon some sixteen or eighteen inches, but there was no tumour present. The intussusception was quite easily reduced after the laparotomy. The child was eight months old. It is always a good idea to give an injection per rectum as a good many have been cured by this method. After operation this child got around nicely in a few days.

Dr. Pepler in reply said he saw only one motion the child had passed, and this motion showed quite a quantity of mucus. In addition to the mucus there was a distinct tinge of blood and some of the mucus was streaked with blood. He did not see anything

of the peculiar dark or purplish appearance spoken of. He had not noticed any symptom of shock in this patient, and in other cases he had seen and had reports of, there was nothing suggestive of shock in the early stages. Later on when there is the long invagination with stretching of the bowel there is severe shock. In the early stages of intussusception there is no shock and there is no tenesmus.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE ninth regular meeting of the society was held Friday, February 6th, 1914, Dr. D. F. Gurd, president, in the chair.

LIVING CASES: 1. Anterior metatarsalgia, by Dr. A. MacKenzie Forbes.

Dr. Forbes exhibited the second case of this condition which he reported at the last meeting of the society. The patient had been operated on three months ago and showed excellent results.

2. Rodent ulcer of the inside of the nose, cured by radium. Dr. A. H. Pirie. Twenty-two years ago patient had an ulcer on the outside of the nose which was operated upon eleven years later and disappeared for some time. It grew again both inside and out and was cut out two years ago. There was again recurrence and the patient came for *x*-ray treatment. There was a mass the size of a green pea in the inside upon which the *x*-rays had no effect, as they could not be directed upon the swelling. After two months' treatment with radium the inside growth disappeared as well as the outside.

DISCUSSION: Dr. G. E. Armstrong: I have had quite a number of cases of rodent ulcer treated very satisfactorily with radium; one, an old man, where the patch measured one inch or more in all directions and had eaten away part of the side of one nostril. He returned to the hospital two years after treatment with the nose well but with a patch on the cheek.

Dr. Fraser B. Gurd: How soon after the application is the effect noticeable? I was told by one physician that in a case he was treating it took twelve days. This was a case of cancer of the cervix which he hoped to make operable after the application of radium for twenty-four hours. In other cases he had seen it wither away.

Dr. A. H. Pirie: If one lays radium on the skin it will take from seven to fourteen days before the reaction takes place. In my case the application was continued over four weeks, when the swelling was practically gone.

PATHOLOGICAL SPECIMENS: Series by Dr. L. J. Rhea.

1. House maid's knee.

2. Portion of liver, right lung, and a thick firm mass of scar tissue which extended from the region of the kidney up behind the liver and under the diaphragm which is very greatly thickened. Removed from a man aged forty-nine, who for four years suffered from symptoms clinically of chronic nephritis. Patient had but one kidney that functioned, that was markedly hypertrophied and showed a chronic and acute nephritis. In the situation of the other kidney there is a stone which conforms very much in its outline to the pelvis of the kidney. The pelvis in which this stone was placed drained into the bladder through a greatly thickened ureter. The man gave absolutely no history referable to any lesion of the kidney but there evidently had been one, followed by a perinephritic abscess which extended upward and left a subdiaphragmatic lesion on the right side.

3. Kidneys showing acute and chronic nephritis most marked in glomeruli. Septic process in lung, area of pneumonia in centre of which is a lung abscess. Larynx, just at vocal cords is a small opening through mucous membrane into a collection of pus and bone is eroded. Patient aged forty-eight, showed clinically bronchitis, marked enlargement of heart, dyspnœa, slight swelling of one ankle joint. Bronchitis subsided, laryngeal trouble began, loss of voice, became aphonic, had stridor, pain in throat. Three days before death developed temperature, respirations rapid, pulse 160, and at base of left lung dulness with broncho-vesicular breathing, two chills, death.

DISCUSSION: Dr. J. G. Adami: I take it that the abscess in the larynx is a suppurative perichondritis. I would ask Dr. Rhea if he would regard that as the earlier condition and consider the pneumonic patch as an inhalation pneumonia secondary to discharge of the abscess into the larynx, the glomerulitis being an indication of a later bacteriæmia? Of course here we deal with a succession of changes all due to infection by the one organism, the streptococcus.

Dr. L. J. Rhea: The lesion in the lung is certainly more recent than that in the larynx and we interpret that as secondary to aspiration pneumonia. Whether the lesion in the kidney is secondary to the lesion in the throat is difficult to say, though I believe clinically the symptoms in the throat came on after the recent attack of the acute lesion in the kidney.

Dr. F. G. Finley: When the man first came in he presented

evidence of a chronic condition in the kidney and then the larynx condition developed, and, just before he sank, there was an acute exacerbation, chills, etc., from the lung abscess.

CASE REPORTS: 1. Diverticulum of the bladder, by Dr. J. W. Hutchinson.

2. Three cases of gastric neuroses, by Dr. G. S. Mundie. (1) Woman aged twenty-two, stenographer, complains of difficulty in swallowing, pain in stomach, nervousness, for six months since coming to Canada. Food goes down half way and then seems to stop, though it eventually goes down all the way. Was treated for gastric or œsophageal ulcer by several doctors. History reveals the fact that seven years ago her mother had gastric pain and vomiting and patient nursed her mother. Evidently at that time this made an impression on the patient's mind and now, coming to this country a stranger and getting run down in health, she had developed this neurosis. Under suitable conditions she is improving rapidly. (2) Woman aged seventeen, Jewess, doing house and office work, complains of vomiting. For several years has been troubled with these attacks occurring two or three times a year and lasting for two weeks. Vomited immediately after eating; soreness and heartburn for some time, and vomitus consisted of food taken, no blood. Also suffered from headaches, not relieved by glasses. Family history revealed the fact that her father was divorced from her mother, the child staying with the mother. Later she returned to the father, who had married again, and was compelled to work hard, there being several children in the house under her care. With rest and treatment in the hospital her condition improved and the vomiting ceased. On her return home, however, it occurred again. (3) Woman aged twenty-eight, office work, complains of diarrhœa, pain in abdomen, flatulence, weakness and nervousness. She has been under treatment many times. In 1907 operated on for gall stones, one small stone found in cystic duct; in 1908 gastric adhesions were broken down, and the same year a gastro-duodenostomy performed although the diagnosis was gastric neurosis. On examination at present nothing organically wrong; patient very hysterical. History given that father had left her mother and had gone to live with another woman, and her mother had treated her very badly. She had an attack of aphonia on landing in this country and has had two or three attacks since. There are jerkings and twitchings of the body which have continued for several months. Nurse found the patient one day perfectly still, and asking her about this she declared she had just decided to stop. The diarrhœa and vomiting

continued, however. She died January 13th, and the post mortem showed absolutely nothing to account for the condition. It was a functional disease resulting in death.

These cases illustrate how careful one must be in telling a nervous patient they have a gastric ulcer or other similar condition, and also that one should look carefully into the history, six, or even ten, years back for some reason that might account for the present condition. It must be remembered that the emotions play a large part in these conditions and that drugs will not cure the patient but that one must treat them from a psychological standpoint.

Dr. F. G. Finley: We all see cases of hysterical vomiting now and then and wish that we knew what we could do with them. I have observed several cases in which acidosis occurred as the result of starvation. One young woman refused food for some time, had vomiting, and became very ill with an attack of urgent dyspnœa, collapse of pulse, and an examination showed acidosis. I have had one or two other cases showing a similar condition of acidosis though not so severe. This may be the cause of death in some of these cases.

PAPER: "Autoinfection from intestinal stasis," by Dr. G. E. Armstrong. (See page 373). Dr. Pirie illustrated Dr. Armstrong's paper by a series of slides of *x*-ray plates showing stasis in various parts of the intestine from the stomach, jejunum, ileum, cæcum, appendix and colon.

Professor A. C. Geddes, of the anatomical department of McGill University, discussed the various developmental conditions that may arise and be a cause of intestinal stasis. In summing up, Professor Geddes said that the teaching of anatomy is that intestinal stasis is likely to be caused either by developmental failure in the gut itself, or in the mesentery, or as the result of prenatal adhesions; or, it may be due to subinfection leading to adhesions, or to a series of displacements which belong to the degenerative part of life and which are found both in the male and female, more expecially in the female because her abdominal musculature is more subjected to destroying influences.

Dr. J. G. Adami: This subject of intestinal stasis is so large that there are very many points I should like to take up and discuss, for the views regarding it appear to be in a terrible muddle. I should, in the first place, like to make a protest against the opinion promulgated by Sir Arbuthnot Lane, Keith, and Barclay Smith, that the large intestine is a cesspool. In contradiction I would say that we have a functional organ, and the very existence of the

ileo-cæcal valve and the arrangement of the different sections of the large gut indicate function, while, as Dr. Armstrong has pointed out, we have evidence that it is an excretory organ. I am strongly against the view that under normal conditions this is the main site for putrefactive changes in the chyme. The extraordinary manifolding of the mucosal surface of the whole length of the small intestine by means of villi, their absence in the large intestine, the experiments on the absorption of fats, etc., indicate that the small intestine is the chief site of absorption of food stuffs. The evidence afforded by Hertz concerning physiological stasis in the lower end of the ileum and the extraordinary development of the protective lymphoid mechanism in this same region points strongly to deleterious absorption being largely liable to take place there rather than in the colon. Compared with the ileum, the cæcum has relatively inconsiderable lymphoid mechanism, and this decreases as we descend the large intestine. It is in the lower end of the ileum that there is the greatest danger from bacterial activity. The progressive concentration of the chyme in its conversion into the more solid fæces in itself arrests bacterial growth. We have the extraordinary fact that while from one quarter to one third of the solid fæcal matter is composed of bacteria, the vast majority of these are dead. The healthy stool affords in fact relatively few colonies. In opposition to Dr. Armstrong's statement that the main production of indol is in the large intestine, I would point out that dry scybala can afford abundant indol without there being a trace of indican in the urine, and also that indicanuria is most marked when there is obstruction or inflammation of the upper part of the small intestine. So far as they go, the indications are that, unless there be serious inflammatory changes in the large intestine, there is not much absorption of deleterious dissociation products in the food in this viscus.

From another point of view I wish to emphasize what I have already urged elsewhere, namely, that a study of this subject demands the fullest coöperation between the surgeon and the laboratory worker. It is no use to think or to talk of "auto-intoxication." What we need is to work until we obtain the true cause of these various symptoms and more or less chronic diseases. That there is a relationship between their development and previous chronic states of intestinal stasis we must, I think, all be ready to admit. But this admission would not necessarily mean that stasis is the only cause of these conditions, still less that they are of toxic origin. For thirty years, since Brieger discovered the pto-

maines, workers upon alimentary intoxication have been hard at work testing one or other protein dissociation product. Dr. Armstrong claims that very little has been done upon this subject: much has been done; it is the result that has been little. The abundant negative findings indeed are rather remarkable. So far with indol introduced in large quantities symptoms have been gained similar to those met with in simple constipation. Even then though it might be objected that the dose required to obtain these symptoms is so large that it is difficult to believe that this alone can be the cause. I would urge once again what I have for long years held, that these chronic disturbances are set up not by intoxication—by the absorption of toxic substances from the intestines—but are the results of recurrent low infection, or as I have termed it, "subinfection." The pouring out of increased numbers of leucocytes from the inflamed mucosa into the lumen of the gut results in an increased return of these leucocytes through the mucosa laden with intestinal bacteria. These bacteria, so introduced, with low pathogenic properties, will not multiply, but, in the lymph nodes and elsewhere undergoing destruction, liberate their toxines in the process. More particularly the chronic fibrosis, the fibroid disturbances of the various organs is brought about by the local action of these toxines upon the higher cells of the tissues, and the stimulation of the lower connective tissues. There could be no stronger support of these views than the recent experimental production of rheumatic myositis by Rosenow, who has demonstrated conclusively that organisms of the streptococcus viridans type, arrested in the muscle capillaries, multiply until such time as a local reaction is set up, and following ingestion of the streptococci by the endothelial cells lining the capillaries, their digestion and destruction results in necrosis of the muscle fibres in the immediate neighbourhood, the process being due evidently to diffusion of the toxines. It is this local necrosis that precedes the development of fibrous tissue. Only I would repeat, this entrance of bacteria, saprophytic upon the surface of mucous membranes, may occur in several regions—from the tonsils in tonsillitis, from the gums in pyorrhœa alveolaris, from the peribronchial glands in respiratory affections like tuberculosis, from the urethra in gonorrhœa, and—instead of talking of autoinfection or autointoxication, as ascribing all to intestinal stasis—each individual case must be studied by the surgeon or physician in combination with the expert laboratory worker; each case must be traced to its cause. Then and only then shall we have a sure basis for advising short circuiting

or other treatment—in the absence of recognisable kinks and obstructions, which of course call for surgical interference.

Dr. A. E. Garrow: Dr. Armstrong stated that, in one of his recent cases that he had short circuited, he had removed the colon. I would like to ask what has been his experience with respect to this particular phase of short circuiting, whether it has been associated with evidence of regurgitation of fæcal matter back through the ascending and transverse and descending part of the large bowel. Three years ago, in discussing the subject with Sir Arbuthnot Lane and more particularly with several London surgeons who had been following the work, the frequent necessity of doing a second operation was mentioned. The remark was made that cases had been returning at the rate of two or three a week to have the large bowel removed after short circuiting operations. My own experience is limited except for cancer of the sigmoid, two cases, in both of which there was distinct mechanical obstruction, not malignant, and in one of these I have had, after an apparent satisfactory improvement, some rather distressing abdominal symptoms.

Professor F. R. Miller of the physiological department of McGill University discussed the nervous mechanism in connexion with the gastro-intestinal tract.

Dr. G. E. Armstrong: I have tried to put the matter in a judicial way. I have been in touch with Sir Arbuthnot's work for a good many years, and I had never been sufficiently impressed to undertake it until I began the series of cases here reported, all of which are operations that I have done. From my experience I should say that the procedures justify a further trial in selected cases. I do not think the time has come to advocate short circuiting in a general way or in any large group of cases, but I think that there are certain cases in which it is worthy of a further trial before we decide what its value is, and it is with that object that I read this paper to-night and that we try to bring forward the principles which should govern us in this work. We have the bacteria in the digestive fluids of the mouth, stomach, and intestines, and we have the mechanical condition associated with the ileo-cæcal valve, this I believe is an important thing and I think the question is worth further study and observation. These three distinct influences are before us for further study and, personally, I am not prepared to come to any conclusion other than that I have stated. Dr. Garrow raised the question of regurgitation into the colon. The case that I operated on to-day was the first that I had opened after short circuiting. Here was a girl who for eight years had had every form of treatment

carefully carried out and it had accomplished very little, and the chances were that she would go on year by year getting worse. I felt that it was a fair proposition in the face of the statement that good results follow colectomy. When I opened the abdomen the colon was empty, the transverse ascending colon and cæcum showed no evidence of regurgitation backwards. Lane has found that under thirty years of age it has not been necessary to remove the colon but that after that age it has sometimes been found necessary on account of regurgitation backwards and continued absorption of toxic materials. I feel a certain responsibility in discussing a paper of this kind. It is before the world. We have to consider it, and I think the best way to consider it is to take up the subject in all its bearings, look at it from all sides, and try to give it a thorough sifting before we come to any definite conclusion.

ONTARIO MEDICAL ASSOCIATION

At the annual meeting of the Ontario Medical Association to be held in Toronto on May 26th, 27th, and 28th, Dr. E. Libman, of Mount Sinai Hospital, will deliver the address in medicine on "Subacute Endocarditis." The address in surgery will be given by Dr. Finney, of Baltimore, who will speak on "Some of the causes of failure in operation for gallstones." The programme is largely clinical, interesting cases of every description being shown at the hospitals. Many operations are also planned On the last afternoon the association will be the guests of the Ontario Jockey Club at the Woodbine races.

CALGARY MEDICAL SOCIETY

The annual meeting of the Calgary Medical Society took place on Tuesday, April 7th. The officers elected for the year 1914-1915 are: president, Dr. G. Johnston; vice-president, Dr. H. McGill; secretary, Dr. J. L. Allen; treasurer, Dr. E. B. Roach; executive committee, Dr. McEachren, Dr. Clark, and Dr. Costello.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. H. A. McCallum, London, Ont. President-elect—Dr. Murray MacLaren, St. John, N.B. Secretary-treasurer—Dr. W. W. Francis, 836 University Street, Montreal.
Annual Meeting, St. John, N.B., July 7th, 8th, 9th and 10th, 1914.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. R. A. Reeve. Secretary—Dr. Harley Smith.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.
Annual meeting, Vancouver, June 19th and 20th, 1914.

CALGARY MEDICAL SOCIETY:—President—Dr. G. Johnston. Secretary—Dr. J. L. Allen.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Dr. J. G. Adami, Montreal. Secretary—Dr. George D. Porter, Ottawa.
Annual meeting, Halifax, July 13th and 14th, 1914.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. N. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. C. A. Hodgetts. General Secretary—Major Lorne Drum.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

EDMONTON MEDICAL SOCIETY:—President—Dr. J. S. Wright. Secretary-treasurer—Dr. Jamieson.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. Frederick McEwen, Aylmer, Ont. Secretary-Treasurer—Dr. A. B. Riddell, Bayham.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.

HALIFAX MEDICAL ASSOCIATION:—President—Dr. Kirkpatrick. Secretary—Dr. MacIntosh.

KINGSTON MEDICAL AND SURGICAL SOCIETY:—President—Dr. W. G. Anglin. Secretary—Dr. W. T. Connell. Treasurer—Dr. G. W. Mylks.

LONDON MEDICAL ASSOCIATION:—President—Dr. C. H. Reason, 538 Dundas Street. Secretary-treasurer—Dr. L. S. Holmes, 260 Hamilton Road.

LUNENBURG-QUEEN'S MEDICAL SOCIETY:—President—Dr. J. W. Smith, Liverpool. Secretary—Dr. L. T. W. Penney, Lunenburg.

MANITOBA MEDICAL ASSOCIATION:—President—Dr. J. Halpenny, Winnipeg. Secretary—Dr. Ross Mitchell, Winnipeg.

MEDICINE HAT MEDICAL SOCIETY:—President—Dr. O. Boyd. Vice-President—Dr. H. Orr. Secretary-treasurer—Dr. W. Knight.

MONTREAL MEDICO-CHIRURGICAL SOCIETY:—President—Dr. D. F. Gurd. Secretary—Dr. Hanford McKee.

NEW BRUNSWICK MEDICAL SOCIETY:—President—G. Clowes Van Wart, Fredericton. Corresponding Secretary—D. C. Malcolm, St. John.

NOVA SCOTIA MEDICAL SOCIETY—President—Dr. G. E. DeWitt. Secretary—Dr. J. R. Corston.

ONTARIO MEDICAL ASSOCIATION:—President—C. F. McGillivray, Whitby. Secretary—Dr. F. A. Clarkson, 421 Bloor Street West, Toronto.
Annual Meeting, Toronto, May 26th, 27th and 28th, 1914.

OTTAWA MEDICO-CHIRURGICAL SOCIETY:—President—Dr. J. R. O'Brien. Secretary—Dr. R. K. Paterson.

OTTAWA MEDICAL SOCIETY:—President—Dr. Charles W. Gorrell. Secretary—Dr. A. MacLaren. Treasurer—Dr. Harold Alford.

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REGINA MEDICAL SOCIETY:—President,—Dr. Gorrell. Secretary—Dr. Dakin.

ST. JOHN MEDICAL SOCIETY:—President—Dr. D. Malcolm. Secretary—Dr. F. P. Dunlop.

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Medical Societies

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President—Dr. A. Rousseau, Quebec. Secretary—Dr. A. Vallée, Quebec.
Will meet in Quebec, August 31st to September 3rd, 1914.

ASSOCIATION MÉDICALE C. F. DE MANITOBA:

President—Dr. J. M. O. Lambert. Secretary—Dr. G. A. Dubuc, St-Boniface, Man.

ASSOCIATION MÉDICALE DE L'OUEST DE MONTRÉAL

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ASSOCIATION MÉDICALE DU COMTÉ DE PORTNEUF:

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ASSOCIATION MÉDICO-CHIRURGICALE DU DISTRICT DE JOLIETTE:

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President—Dr. J. P. Décarie. Secretary—Dr. Wilfrid Derome.

SOCIÉTÉ MÉDICALE DE RIMOUSKI:

President—Dr. L. F. Lepage. Secretary—Dr. J. A. Ross, jr., Ste-Flavie Station.

SOCIÉTÉ MÉDICALE DES COMTÉS DE BEAUCE ET DORCHESTER:

President—Dr. Fortier. Secretary—Dr. L. M. Déchêne, Beauceville.
Regular meetings, March, June, September, and December.

SOCIÉTÉ MÉDICALE DE ST-JEAN (IBERVILLE).

President—Dr. Moreau. Secretary—Dr. Duval (St-Jean d'Iberville).

SOCIÉTÉ MÉDICALE DE ST-HYACINTHE:

President—Dr. J. C. S. Gauthier, Uptown. Secretary—Dr. J. A. Viger, de St-Hyacinthe.

SOCIÉTÉ MÉDICALE DE SHEFFORD:

President—Dr. N. H. Blunt, Granby. Secretary—Dr. Wilfrid Lord, Granby, Co. de Shefford.
Regular meetings twice a year.

SOCIÉTÉ MÉDICALE DE TROIS-RIVIÈRES:

President—Dr. DeBlois, Trois-Rivières. Secretary—Dr. O. Darche, Trois-Rivières.

SOCIÉTÉ MÉDICALE DE VALLEYFIELD:

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SOCIÉTÉ MÉDICALE DU COMTÉ DE CHAMPLAIN:

President—Dr. Trudel. Secretary—Dr. Bellemare, St-Narcisse.

SOCIÉTÉ MÉDICALE DU COMTÉ DE KAMOURASKA:

President—Dr. B. Vézina, St-Alexandre. Secretary—Dr. U. J. I. Pajeau, Ste-Anne.
Regular meetings, February, June, and October.

SOCIÉTÉ MÉDICALE DU COMTÉ DE MASKINONGÉ:

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SOCIÉTÉ MÉDICALE DU COMTÉ DE TERREBONNE:

President—Dr. Grignon, St. Jérôme. Secretary—Dr. H. Prevost, St. Jérôme.

SOCIÉTÉ MÉDICALE DU COMTÉ DE WOLFE:

President—Dr. Thibault. Secretary—Dr. A. Pelletier, St-Camille.
Regular meetings, the first Tuesday of March, June, September, and December.

SOCIÉTÉ MÉDICALE DU DISTRICT D'OTTAWA:

President—Dr. E. Aubry, Hull. Secretary—Dr. J. E. D'Amour, Papineauville.

LA SOCIÉTÉ MÉDICALE DE QUÉBEC:

President—Dr. E. M. A. Savard. Secretary—Dr. Edgar Couillard.